THE

SOUTHERN AGRICULTURIST.

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PART I.

ORIGINAL CORRESPONDENCE.

ART. LI.—*An Address delivered before the Horticultural Society of Charleston, at the anniversary meeting, July 10th, 1833; by* Rev. J. BACHMAN.

AT the last anniversary of this Society, the high and honourable duty was assigned me of addressing you on this occasion. I feel, and I acknowledge most gratefully, this proof of your kindness and favourable opinion; but I have to lament, that however zealously and ardently I am attached to the cause which is espoused by this Society, I am unable to bring before you the result of much practical knowledge on the subject of horticulture, and that, therefore, some of the theories which I am about to advance, may not, in the end, bear the test of experiment. I am encouraged, however, to trust to your indulgence, whilst I attempt to discuss a subject on which I may not be practically as familiar as some other members of this Society, under a belief that many important discoveries in horticulture still remain to be made—that, whilst many theoretical speculations may be demonstrated to be futile, and many experiments may fail of producing the desired effect; yet, that this very failure may serve as a beacon to future travellers, and that every successful experiment will, when recorded, confer a benefit on mankind for ages to come.

Horticulture has two objects in view.

First:—The introduction and cultivation of such vegetables and fruits as may serve for the food or medicine of man.

Secondly:—The cultivation of trees, shrubs and flowers, which by their shade, fragrance, or beauty, may serve to refine and purify his mind, add to his pleasures, and awaken in his bosom sentiments of admiration to that being who in mercy to man has promised that "while the earth remaineth, seed-time and harvest, and summer, and winter, shall not cease."

Time will not permit me to enter into a detail of the history of this art. Suffice it to say, that several of the ancients, and particularly Cicero, enumerated this as among the most pleasing occupations of the mind—as particularly adapted to the aged, and calculated to give health to the body, and afford agreeable exercise to the mental faculties. From this exhaustless store of human happiness, the poet has derived some of his greatest beauties, the philosopher some of his most interesting disquisitions, and the philanthropist some of the noblest plans for the amelioration of our race. How greatly is our pleasure in reading the works of Homer and Virgil—of Milton, Thompson and Cowper, enhanced by the continual references to this delightful theme. But not even the charms which Milton and Homer and Lucullus have sung—or the descriptions which Lord Walpole and Sir William Temple, in more modern times, have left us on this delightful subject, shall prevent me from entering into those more humble practical details with which the present age furnishes us. I proceed to remark that comparatively little was done in the science of gardening till within the last sixty years. Since that period, the justly celebrated national establishment of France, under the auspices of Desfontaine, Jussieu and Thouin, has arisen, which contains every thing directly and remotely connected with this department of knowledge. It was not until 1804, that Sir Joseph Banks, aided by Sir James Edward Smith, and Mr. Thomas Andrew Knight, and a few others, instituted the Horticultural Society of London. Five years afterwards the Caledonian Horticultural Society was formed in Edinburgh, and from thence a fondness for the studies and labours of this art was by the aid of similar institutions diffused over all Europe. In

some parts of Germany, the culture of a garden and fruit trees, forms a part of the education of the ordinary seminaries, and no schoolmaster is permitted to exercise that function without a certificate of his capacity to teach the management of the garden and the orchard. Travellers inform us that in Seville and Cadiz, the windows and balconies are every where filled with pots containing a great variety of the beautiful Amaryllis, with the favourite Polyanthus and Narcissus, the gaudy Tulip and other bulbs, and with ornamental jars of the Geranium and the Jessamine. The Pink is there, as in every part of the world, a favourite flower, and even the lowest cottages have a few pots of the Sweet Basil, the Daisy or the Violet.

In France, among that gay and luxurious nation, the science of horticulture is cherished with the greatest enthusiasm. In Paris, alone, three courses of rural botany are delivered gratis every year—several classes are composed of upwards of two hundred individuals, some of whom are soldiers and cottagers, and men who are moving in the humbler walks of life. The garden of the Thulleries are invaluable from their situation in the very centre of Paris, and from their being open at all times to all the world. Their walks are shaded with beautiful and airy groves, bordered with a constant succession of showy, flowering plants. In England, such have been the improvements, since the establishment of these Societies, that no one can gaze upon their beautiful, well trimmed lawns, their gay parks, and the flowers that bloom around many a cottage, and climb over the lattice of the poor man's dwelling, without being convinced that a love for the beauties of nature rises spontaneous in the human heart; and that the more we cultivate it, the more we will be led to admire the works of God. An intelligent German traveller, speaking of the habits of the English people, makes these remarks—"we 'have visited the celebrated flower market of London, of 'which no German who has not seen it could have formed 'a proper idea; what chiefly struck us is that the greatest 'rarities and the most trifling articles are here exposed for 'sale together, and are both eagerly bought. The wealthy 'and the respectable Englishman who is a connoisseur, 'will purchase nothing that is common, for if pretty he has 'it already in his garden; and the poor Londoner who can-'not afford to buy what is beautiful, will still obtain some-

'thing green to decorate the window of his dark little attic, 'and give his last farthing for a bit of verdure." He speaks of the wonderful improvement in horticulture, and ascribes it to the influence of the Horticultural Societies, declaring, that although he had been forty years conversant with the raising of fruit, he had never beheld finer Peaches, Nectarines, Plums, Melons, Grapes and Pine Apples than he saw there. Agents from some of the Societies, have been sent into distant lands, to enrich their native country with the beauties of Pomona and Flora, and such has been their success under these exertions, that some of the most delicious fruits and beautiful shrubs and flowers that are known in the world have been introduced, naturalized and cultivated, and are now ministering to the wants, or adding to the gratification of man.

In 1818, a small number of enterprising and intelligent practical gardeners and nursery-men, in the city of New-York, formed themselves into an association, for the purpose of introducing such improvements in the cultivation of vegetables as they were competent to effect. Premiums were offered by the Society, and in a very few years there was such an improvement in the products of their gardens, that the vegetable markets of New-York, which before had been very indifferent, may now vie with those of any other city in our country. In the month of May last, I had the pleasure of attending their exhibition of flowers, which, for abundance, variety and beauty, exceeded any thing that I have witnessed. Similar institutions have arisen in Pennsylvania, Maryland and New-England, and it is probable that Massachusetts now possesses the most flourishing and useful institution of the kind in our country.

The establishment of nurseries is but of a comparatively recent date, but still there are few valuable trees, shrubs, bulbs or flowers, that may not be found in the gardens of Prince, at Flushing—of Floy, Wilson, Hogg or Thorburn, in New-York—of Buel and Wilson, in Albany—of Landreth or Carr in Philadelphia, or of Noisette, who long has devoted himself to the cause in the neighbourhood of our own city.

The reason why horticulture, until very recently, was with few exceptions limited to the culture of common culinary vegetables and fruit, is very evident. The wants and necessities of a young nation are generally so imperi-

ous that they have little time to attend to the ornamental and scientific departments of gardening. The introduction of luxuries requires time, leisure, and wealth.

Our own institution is but of very recent origin. We have met to celebrate our second anniversary. We have had to encounter difficulties on all sides. Some prejudices at first existed among some of our gardeners, who seemed to fear that we were associating for the purpose of obtaining and publishing to the world the secrets of gardening, which they had acquired after many years of experience, and which by increasing competition might eventually prove an injury to their business. These individuals could scarcely have recollected that this Society was principally instituted for their benefit—that scarcely an individual member was engaged in cultivating vegetables for the market—that the knowledge which we acquired, and the improvements which were made on the subject of horticulture, were all at their service; and that by improving the articles we increased the demand for their consumption. We believe that these prejudices have, in a great measure, been removed.

Another difficulty with which we have to contend is, that those members of our Society, who are planters by profession, and could aid us by their experience, are absent from us a portion of the year, and attend but little to their gardens, on their plantations, during the winter and the spring, since they are aware that in summer and autumn, when fruits and most of our vegetables are in perfection, they would be absent from their plantations, and therefore could not enjoy them.

And we may further add, that the fierce political contest, in which our people have been engaged, had, in some measure, (for a time, at least) diverted many active and good men from these useful and pleasing employments, to the study of the principles of government, and have sometimes led those who breathed the same air, and who once admired each other's gardens—interchanged the delicious fruits of the season, and presented each other with the Rose, the Pink and the Violet—to regard each other as the enemies of their common country. These dark and unpleasant scenes, we trust, have now all passed away, and will soon be buried in oblivion; and nature, that is so full of harmony and love, that has covered the earth with fragrance and

with beauty, invites us to repose in friendship together on the green lap of earth, beneath the shade of her majestic trees; and the Father of the universe seems to say "Let there be no strife between you, for ye are brethren."

Come then, let us unitedly engage in studies and employments which will not be confined to the sweets of Flora or the apples of Pomona; our views will embrace a wider field, a more extended sphere of public utility. Whilst we are introducing new objects of horticultural industry, we may be able to diffuse botanical and scientific knowledge—contribute something to ameliorate the condition of the poor, add to the morals and the virtue of our people, and lead the contemplations of man from "nature up to nature's God."

The science of horticulture has not heretofore been held in that estimation to which it was certainly entitled. It was formerly pursued principally by persons in the humble walks of life—persons possessed of but little scientific knowledge, who obeyed the first impulse of nature and procured the bread of life by labour and toil. No wonder then, that nothing very interesting or attractive could be found either in the life or the employment of such an obscure uncultivated being. To my view, they are few states of existence less enviable than that of an ignorant man or woman working hard on the farm or garden, without having knowledge or science enough to be interested in their occupation, and in the scenes around them.

But it cannot fail to awaken pleasure in every virtuous and reflecting mind, to observe how generally a taste for rational enjoyments, as exemplified in the growing partiality for the study of natural history, and in the encouragement given to the various branches of horticulture, is superceding the sports of the field, and the revels of the banquet. The eager search after truth in the present age has, in some measure, redeemed the supineness of former times. The tree of knowledge, whose fruit was heretofore so inaccessible to men in the humbler walks of life, has been freely plucked by all who choose to gather it. The obstructions which were thrown in the way by the ancient languages, and by the pretended hidden secrets of the art, have all been stript of their mysterious covering—a more general knowledge of what the soil is capable of producing, is diffused among the cultivators, a taste for reading various

valuable productions upon horticultural subjects has increased. A majority of the articles contained in the horticultural publications of England and Germany, are written by professed gardeners, who labour in the garden and green-house, and we trust that the time is not far distant when our own excellent publication on Southern agriculture will be enriched with the productions of the scientific and practical gardener. Although we are yet sadly deficient in our knowledge on these subjects, yet there are improvements of a very gratifying character in many portions of our land, and we hope that before many years the sciences of chemistry, botany, entomology, ornithology and conchology will be as regularly taught in our schools and private families, as are music and the French language at the present day; and this is certainly calculated to open a great source of pleasure and advantage to the rising age.

The advantages of science in horticultural pursuits do not appear to be sufficiently estimated, and in order to elucidate this subject, I beg leave to invite your attention to the observations and facts which I am desirous of bringing to your notice. I would endeavour to show you in what way ornithology, chemistry, entomology, and physiological botany are closely allied to, and inseparably connected with the science of horticulture.

The study of ornithology which is least allied to this subject, still presents strong claims. Man is known to look with a jealous eye upon all who oppose his interests. In obedience to this natural dictate of the passions, he not only grapples with him of his own species whom he views as his enemy; but he wages war on the beasts of the field, on the fowls of the air, and the insect world, and all that he believes is about to endanger the prospect of his success. In this way the innocent often suffer for the guilty, and the harmless bird that comes to add to our pleasures by warbling its sweet notes in our gardens and on our housetops, or who is a positive blessing to us, by lessening the number of depredating insects, falls indiscriminately with the crow and the grackle at the sound of the murderous gun. Now all this does not usually proceed from a natural disposition to cruelty, but from ignorance. Without a suitable knowledge of the science of ornithology, we are unable to know which birds are injurious, and which are a positive benefit to the farmer—which ought to be banished

from our fields, orchards and gardens, and which ought to be encouraged there by all the allurements in our power. Kalm tells us that when a bounty was set on the head of the little crow, in Virginia, (meaning probably some of the genus *Quiscalus* and *Icterus*, which go under the common name of black-bird,) which were destroyed at an enormous expense to the state, the insects so increased, that they would have bought them back again at any price. The purple grackle in New-England was destroyed in consequence of the governor's offering three-pence a head, and the result was, that insects multiplied so rapidly, that the herbage was destroyed, and the inhabitants were obliged to import hay from Pennsylvania and England. The poor wood-pecker is shot by every idle boy, because he is said to extract the juices of apple trees, when in most cases he is allured thither by the worm which is perforating the tree; and thus the bird on which we pronounce sentence of death, as on an enemy, has come to save the tree by feeding on its destroyer. The tyrant flycatcher, *(muscicapa tyrannus)* is called the bee-bird, and is slaughtered, when for one bee that he destroys, he relieves the farmer of a thousand insects that were depredating on his fields. Of the large family of flycatchers, *(muscicapa,)* warbles, *(Sylvia,)* thrushes, *(turdus.)* that constitute three-fourths of our land birds, scarcely one is in any respect a depredator on the property of man; but on the contrary, all greatly aid him in preserving his fields and fruits from devouring insects. Let then a sufficiency of ornithology be known by the cultivators of the soil to distinguish in the feathered race an enemy from a friend; and if the hawk, the crow, and the starling, are deserving of death for their depredations, let us spare the beautiful warblers, the thrushes and the wrens, that come to our gardens to claim the worm that is injuring us, and who are ready to reward us with a song.

The science of chemistry advances no inconsiderable claims to the attention of the horticulturalist. In order to the successful rearing of plants, we must place them in soils adapted to their natures. It is well known that the soil calculated for the growth of one plant is often destructive to the life of another. The experience of the members of this Society can testify, that the plants which flourish in the garden of one, will not succeed in that of

another. The okra, the tomato, and the watermelon, succeed well in some soils, whilst in others they struggle through a sickly existence and die before they bring their fruits to maturity. The nettle haunts, as it were, the footsteps of man, and clings, as poetry might urge, in very sociality around his dwelling. This plant will not flourish but in a soil containing nitrate of potas, *(salt petre,)* a salt always abounding in the neighbourhood of places where there is calcareous matter. Chemists inform us that every soil is composed of silica, alumina, oxide of iron, salts, and animal, and vegetable remains. The most important consideration is, in what proportions these must be mixed, in order to constitute a fertile soil. Alumina or clay imparts tenacity to a soil when applied. Silica or sand, diminishes that power, whilst chalk and lime have an intermediate effect: they render heavy soils more porous and light, soils more retentive. These simple facts are all important.—Two neighbouring fields by an interchange of soils being often rendered fertile, one of which had before been too tenacious, and the other too porous. The experiments of Sir Humphrey Davy, on the subject of soils, are full of instruction. He found that a rich black mould containing one-fourth of vegetable matter, had its temperature increased in an hour from 65 to 88 degrees by exposure to the sunshine, whilst a chalk soil was heated to only 69 degrees under similar circumstances. But the first, when removed into the shade, cooled in half an hour 15 degrees, whereas the latter only 4. This explains why the crops on light coloured soils are in general so much more backward in the spring, but are retained longer in verdure during autumn than those in black light soils; the latter obtain a general warmth more readily, but part with it with equal speed. Coal ashes sown on beds, cause beans and peas, and many other vegetables to come up two or three days earlier, than where no such application is made; it being a well-known fact that dark coloured bodies absorb caloric more readily, and in larger proportions than those of a brighter hue. As an evidence of what can be effected by a combination of chemical and practical knowledge in the cultivation of the earth, it is only necessary to mention the experiments of the great chemist Lavoisier, in order to impress on the minds of his neighbours, the people of Levandee, in France,

the advantage of combining chemical and practical knowledge. He cultivated two hundred and forty acres on scientific principles. In nines years his produce was doubled, and his crops afforded one-third more than those of ordinary cultivators. I trust that these few hints will suffice to show how much may be gained in horticulture by a knowledge of chemistry.

Entomology too, a science but little known till very recently, lays weighty claims to the attention of the horticulturalist. Wherever we go, we find the earth, the trees, the shrubs, and the air filled with thousands of living beings, assuming the most wonderful changes, and gifted with the most surprising instincts. Some of these, like the silkworm, the cochineal, and the cantharides, add to the wealth or luxury of man, or minister relief to his diseases. Others are destructive of his prospects, and the enemies of his repose. Some attack the roots of his trees and plants which soon wither and die, whilst others fasten upon the blossoms, or upon the fruit, and all his bright prospects are blighted. The fair one who has reared with care and perseverance some favourite plant, finds it drooping and decaying in spite of all her vigilance, and is not aware that a worm may be at its root, or that some insect may visit it at night and deprive it of its buds and leaves; but she knows not the characters of either—she knows not where its eggs are deposited, at what season of the year she may apprehend its attacks, and is utterly unable to guard against it.

When the insect called the Hessian fly made its appearance on Long-Island in 1776, it was wrongly conjectured that the Hessian soldiers, under the pay of the British government, had conveyed this evil along with them in their straw from Germany. The British government feard that it might be introduced into England, and took measures to prevent it. Information was sought by government from practical men in America, some of whom had lost their entire crop by the insect; and yet they were ignorant whether it was a moth, a fly, or what they term a bug. Expresses were sent to embassadors in France, Austria, Prussia and America. The information obtained was so voluminous as to have filled two hundred octavo pages, yet still so little science was possessed by the persons who gave information about the insect, and by those who met to ward off its ravages, that it was

impossible to form any idea of its genus or character till Sir Joseph Banks, an eminent naturalist, lent his aid in the investigation, and gave the nation the only information that could be relied on. An insect with a somewhat similar character actually made its appearance in England sometime afterwards. It threw the country into great consternation, as they feared that it might prove destructive to the staff of life; when Mr. Marsham, by tracing out the species proved the alarm to be unfounded. Pursuing the history of this insect again in America, entomologists discovered its character and habits, and by sowing their wheat at a particular time in autumn, when it was too late for the insect to multiply before the cold weather set in, and when the plants would be too much forward to sustain much injury in the spring, the cultivators have, in a great measure, arrested its destructive progress, and thus science has lent her aid to agriculture, in averting evils which at one time threatened to banish from our land the culture of the finest grain, with the exception of rice, which is found in the world.

The utility of entomological knowledge will farther appear from a circumstance which occurred in Sweden. The oak timber in the royal dock-yards had been perforated and greatly injured, when the king sent to Linnæus, the father of natural history, to trace out the causes of the destruction of the timber. He detected the lurking culprit under the form of a beetle, *(Lymexylon navale,)* and by directing the timber to be immersed during the time of the metamorphosis of that insect, furnished a remedy which secured it from its future attacks. Another instance, which occured among the elm trees in St. James' Park, London, between the years 1820 and 1824, is recorded. These trees suddenly became affected in a very singular manner. The bark fell from the stem and whole rows died. There happened to be a company of soldiers stationed in the Park, and as the trees were barked to about the height of the soldier's bayonet, the suspicion fell on some unfortunate recruits as having occasioned the injury, and they were arrested; but nothing could be proved against them. Persons were now employed to watch the Park at night, but still in the morning the bark was lying in great quantities around the roots of the trees. At the same time the elms in a grove at Camberwell, near London, were also destroyed. This

was ascribed to the effect of gas escaped from pipes used for lighting the road. Legal proceedings were commenced against the company for the removal of the nuisance. In this state of things, William Sharpe M'Lay, an eminent naturalist, profoundly acquainted with the history of insects was requested by Lord Sidney to draw up a report on the state of the elm trees, for the purpose of referring it to the Lords of the Treasury. He discovered it to be a beetle, *(Hylensius dertructor,)* belonging to the same genus as that which destroys the pines in Germany. By ascertaining its habits, he was enabled to point out a remedy, and the remainder of the trees were preserved.

Suffer me yet to call your attention to one other instance of the effect which ignorance, on the subject of entomology, is calculated to produce. A caterpillar of an unusual size and singular form made its appearance on the trees of the Lombardy poplar, in the State of New-York, some twenty years ago, as far as my recollection will now serve. The ignorant became alarmed; many idle reports were circulated; a dog was said to have been stung by one which occasioned swelling and death; rumour soon made it out to be a child; the newspapers circulated each idle tale. And now the work of destruction commenced—the axe was applied to the ornamental trees that shaded some of the finest streets of their villages. The same work of extermination was carried on at several farm-houses and gentlemen's country-seats. The stately poplars were levelled to the ground and burnt. The lover of nature remonstrated, but it was in vain to contend against the powerful current of prejudice. A little knowledge of the science of entomology might have satisfied the destroyers of those beautiful works of God, that the larva which they so much dreaded was harmless—that it would soon assume a chrysalis form, and after lying inactive for a short time, would put on wings of a brilliant hue, flit joyously on the air, and live on the nectar of flowers.

The celebrated Spanish fly, *(Cantharis of Geoffry, and Lytta of Fabricius,)* which is so invaluable in the healing art, has often mixed with it in our shops, insects which so strongly resemble it, that the venders themselves are deceived, and none but the practised eye of the entomologist could discover the deception, and yet some of these insects (and I have seen a considerable mixture in your own shops)

belong to a different genus, and are not only useless, but may be injurious.

To guard against the depredation of insects, we must first become acquainted with their genera and habits, and then by a course of scientific and practical experiments, we may be able to destroy them or avert their attacks. The larva, *(Aegeria exitiosa,)* that is found at the roots of peach trees has been carefully examined and correctly described by entomologists. Having ascertained that the worms enter the earth at the stem of the tree, about the beginning of August, in this part of the country, a covering of cloth or skin tied round the stem about a foot above the ground—extending three or four inches under the surface, and retained there from the first of July to the middle of September, has been found effectual in protecting our trees against the attacks of this enemy. There are three or four other species of insects that infest the peach itself, one of which only I consider as formidable in its attacks, and most to be dreaded. A course of experiments on the character of these insects, and the best mode of guarding against their depredations is in progress by members of this Society. The result, together with careful drawings, it is believed, will be laid before the Society, in the course of the present summer.

Another insect which has not yet been satisfactorily described, has, within a few years past, fastened itself upon the stems of our orange and lemon trees; and although it is so minute as to require the aid of good magnifying glasses to examine it, after being disengaged from the covering, which envelops it, yet it is so prolific that it now threatens (unless a remedy is soon discovered) to deprive us of the poor remnant of orange trees which the frost has left. Oily substances are known to destroy these insects, but in its application, the remedy prove worse than the disease; the pores of the tree are closed up, and they perish in the coarse of a season. The *coccus* and *aphides* which are such pests to the green-house, are better known, and consequently may be more easily guarded against. I have invariably found that the immersion of the branches of plants infested with these insects in what is called by the apothecaries, the "yellow wash," a composition of three drachms of corrosive sublimont. mixed with a quart of lime-water, proves an effectual remedy.

Time will not permit me to dwell more minutely upon many other species of insects which infest our gardens and our orchards; we are every year subject to the ravages of others with which we are now unacquainted; for some of the most noxious insects in every country, are not indigenous but have been imported. These few hints, I trust, will suffice to show the importance of a knowledge of entomology, in successfully carrying on horticultural pursuits.

But an objection has been urged against this study, which the lovers of the science are anxious to combat, viz. that it requires us to inflict death upon its objects, and we are, therefore, charged with inhumanity. Cruelty consists in torturing or destroying any living thing from mere wantonness, without any useful object in view. The entomologist is not one of these. His insects are, by processes which science has taught him, killed almost instantaneously. He abominates cruelty as much as those who condemn him, but he differs from them in his ideas of the amount of pain inflicted; he does not agree in the truth of the sentiment expressed by the great poet;

> "The poor beetle that we tread upon,
> In corporal suffrance, feels a pang as great
> As when a giant dies."

His knowledge and experience convince him that this contains more poetry than truth. It is a well-known fact that as we descend in the scale of animated being from the highest intelligence to the worm or polypus, there is a gradual diminution of sensibility. The pain of death must be more excruciating to man than to the animal—since with the former, suffering is increased by mental reflections and by the dread of death. So also insects must suffer less than brute animals, because they are differently constituted; they are cold blooded, destitute of the great sympathetic nerve, and breathe through orifices beneath their wings. But time will not permit me to treat this subject at large. Suffice it to say that whilst the Creator has formed insects as perfect as insects are required to be, yet an examination of their whole internal system must convince us that they possess less sensibility than even the tortoise, who is, notwithstanding, known to walk after his head has been separated from his body. Insects will leave their legs in the hand without

experiencing any apparent pain. Say, informs us, that a butterfly, whose body had been perforated by an insect pin, flew off with it to the first flower, and extracted its sweets without seeming to have been at all incommoded. Ants will walk when deprived of their heads. Bees will sting after their bodies have been cut in two. The silkworm and other of the lepidopterous family, after being deprived both of legs and wings, will not only deposit their eggs, as if nothing had occurred, but will live their usual period. Now let us inquire, would a human being be as indifferent, and suffer apparently so little—would he take his food and enjoy himself if his legs or his arms were amputated? Impossible! Besides, the period of an insect's life at the time when it is procured for the cabinet of the entomologist, is the last stage of its existence. It has already passed through various forms and several stages of its short life. The butterfly would have perished in a very few days, and the coleopterous insect would not have long survived; and let it be remembered, that the specimens which are treasured in the cabinet of the naturalist, which he values more than gold, and on which he thus confers a kind of immortality, has, probably, been, by being thus collected, preserved from some rapacious bird, or fish, or insect, which would soon have devoured them. More have been destroyed in this manner, in a single day, than have been collected by all the entomologists in the world. But, if those who are so sensitive on these subjects, should still declare that they cannot reconcile themselves to have any pain inflicted, even on the insect, and for scientific purposes, I answer, in the language of the Rev. Mr. Kirby, one of the first naturalists of the age, and I would add, one among the most humane and excellent of men—"Pray Sir, or Madam, I would ask, 'should your green-house be infested by aphides, or your 'grapery by the semianimate coccus, would this extreme 'of tenderness induce you to restrict your gardener from 'destroying them? Are you willing to deny yourself these 'unnecessary gratifications, and to resign your favourite 'flowers and fruit at the call of your fine feelings? Or, 'will you give up the shrimps, which, by their relish, ena-'ble you to play a better part with your bread and butter 'at breakfast? If not, I shall only desire you to recollect, 'that for a mere personal indulgence, you cause the death

'of a greater number of animals, than all the entomologists 'in the world destroy for the promotion of science."

But whatever objections may be urged against this branch of natural history, as connected with horticulture, none can be made against botany. Here no experiments are necessary that require the infliction of pain. Without a knowledge of systematic and physiological botany, we are unable to understand terms and observations, that must occur in every well written work on horticulture. Botany has become a favourite study among the well-informed of both sexes, in every civilized portion of the world. The attraction of flowers and fruit by their colours, taste, and smell—the delight of rearing a living thing, which grows under our eye, and developes itself from a shapeless mass to one of extreme beauty and loveliness—whose life is free from pain, and whose death seals the promise of its reappearance, will always interest us in favour of this study. And when it can be applied to useful purposes—when it can be made to add to the health and comfort of man—when it makes him better and happier, surely it should find an advocate in every breast.

But it will be urged, that however much true science might aid the cause of horticulture, yet, that most of those who study the sciences have done little more than burden their memories with hard and unmeaning names. Suppose we admit it for the sake of argument, and allow that very few become proficients in the sciences. Is there then nothing gained? Why do men study mathematics, a science so generally recommended? Not certainly to make the bulk of those who attend to these studies either astronomers, or engineers, but simply to exercise and strengthen the intellect—and to give the mind a habit of minute attention and investigation. If the natural sciences did no more than this, the pursuit of them would prove an advantage to man. But infinitely greater benefits may be derived from these studies; they may be applied to many useful purposes in life. They have enabled man to multiply the fruits of the earth—to bring from distant climes, plants and vegetables that will give subsistence to thousands. The introduction of the Irish potato alone into Europe, has been one of the greatest blessings conferred upon that land. The melon, the okra, the tomato, and the artichoke, have

all been brought from a distance, and are now cultivated in almost all the temperate, as well as tropical portions of the globe. The peach, the apple, the pear, and the plum, with their infinite varieties, were originally confined to a small spot of earth, and were of very little value, till science and horticulture united in introducing them, and improving their flavour. The pharmacopia of medicine is indebted to the botanist and horticulturalist, for an immense number of ingredients that are calculated to avert the sufferings, and to prolong the life of man. It was the will of heaven that man should be doomed to suffer pain and sorrow; but that same being, also in mercy, gave us a healing balm in many a vine that clusters in the forest, in many a root, and the bark of many a shrub or tree. These have been discovered by the knowledge and labours of men of science, and now our gardens abound with remedies for many of the countless ills to which we are subject in this life. Some physicians of the present day, have indeed gone so far as to assert, that the healing art could be successfully carried on, without the use of vegetable medicines; but few, I believe, have carried this theory into practice. I am not aware that any thing has as yet been discovered among the minerals that can be substituted in the room of the Peruvian bark, the rhubarb, and an infinite number of vegetable medicines, with whose names you are sufficienly familiar.

The garden and the orchard are calculated to afford the means of health and instruction, to the man of science, as well as the tenant of the cottage. A garden was the first habitation of man; it has ever since been a source of his purest pleasures, of his most healthful employments, and often the means of his sustenance. Multiply around the poor man's cottage, the comforts of life, and the means of enjoyment—attach him to his garden and to his fruits, and you will save him from discontent and crime. These flowers of life will endear him to his home, and his native land, and he will become a good citizen, as well as a happy man. To the wealthy, these studies and employments should be equally dear. *Nihil est melius*, says Cicero, *nihil uberius, nihil homini libero dignius.* (Nothing is more profitable, nothing more suitable for a man of leisure.) Some of these studies by an unaccounteble perversion of intellect have been so abused, as to have been dragged into the ser-

vice of irreligion. It is well then, that the lover of nature, who sees God in all things, who in the mirror of the Creation, beholds and adores the reflected glory of the Creator, should study these works, in order to recommend the great truths of religion, as contained in the word of God, and make them subservient to the best interests of mankind!

(To be continued.)

ART. LII.—*Account of an Agricultural Excursion made into the South of Georgia in the winter of* 1832; *by the* EDITOR.

(Continued from page 367.)

In our last, we gave the arrangement of the fields at "*Hopeton*," and the rotation of crops adopted by Mr. Couper. We believe this rotation is but little attended to even in his immediate neighbourhood. On some few of the rice plantations, cane and cotton are planted, but on none that I recollect, are these made to enter into a regular rotation: in fact, on several they were about abandoning the cane, and the cotton was retained from other considerations and not to alternate with the rice. Mr. Couper has found each of these crops valuable, and the rotation highly advantageous, but this was not the case on the plantations to which we refer. The product of the cane crop was small, and generally inferior, and the cotton planted in the rice-fields yielded but little. On one plantation we saw cotton, averaging not more than 2 feet, in height where it had grown at one time from 10 to 12 feet.* It had been very productive, but was no longer so. The planters with whom we conversed, did not agree in opinion as to the cause of this great and rapid falling off. Mr. Spalding's opinion is that the soil becomes too friable, and therefore recommends large stationary beds, which as they are never reversed become consolidated, and better

* We think it grew higher even than this, but we do not find it noted down in our book, and therefore wish to be within bounds.

fitted, in such soil, for cotton than when first made up. By referring to our account of Sapello, it will be seen that he acts on this principle even there, and that his beds are stationary, and only the plants alternate. On an island opposite to Savannah, formerly owned by him, and now under the management of his son, this system is pursued, we understand, with complete success. It is highly probable, therefore, that the remedy would prove effectual. But what will, in that case, become of the rice crop which is by far the most valuable? It certainly never could be cultivated on those fields. But whilst we think it is highly probable that the remedy would prove effectual, we do not agree as to the cause of this remarkable falling off in the productiveness of the crop. The land must have been very friable when first planted, and it then grew to a prodigious height and bore well, but as soon as these fields were cultivated for a few years in rice, this great change took place, and still continues. We think Mr. Couper has stated the true cause, and the remedy in the following paragraph which we again quote.

"If the land is kept longer than one year in rice, par-
'ticularly if flowed during the winter, the subsequent dry
'crop, has with me, been of inferior quality. The wet
'culture, if two long continued, leaves a sourness in the
'land which is unfavourable to cotton, but more so to
'cane. To avoid this effect, the land should be but one
'year in rice, and kept dry and deeply turned up during
'the winter months."

In this, he is supported by facts, and by his own experience. It is also well-known to all who use swamp-mud, that it can be applied advantageously only after it has been exposed to the influence of the atmosphere, and therefore, it is usual to remove it from the swamps, some time before it is used. Gardners also, who are obliged to be very particular, especially those who cultivate exotics, always are cautious how they make use of any compost, in which there is virgin soil or swamp mud, unless it has been exposed to the influence of the atmosphere for some length of time. If, therefore, the rotation which Mr. Couper has here recommended, and which he has followed with complete success, be adopted on these plantations, we can see no reason why it should not be attended with like results, and instead of cane and cotton being abandoned, they will be considered

as valuable auxiliaries, and as such be continued in cultivation.

It is almost needless to expatiate on the advantages resulting from a judicious rotation of crops. But the rice crop is considered by most of our planters as an exception, and many are of an opinion that even with a decreased fertility the product is more valuable than could be derived from any rotation they could adopt, and consequently, consider that every year a field is not cultivated in rice, they have sustained a loss,* in proportion to the relative value of the crop then cultivated, compared with that of rice.

We will not enter into any discussian on the abstract principle of a rotation, but will meet the question at once by facts, by which alone our planters can or ought to be convinced. We are not engaged in the culture of rice, and therefore have nothing of our own to offer, but we call to our aid the experience of Mr. Couper, than whom we know no one better able to give an opinion, having himself all the experience necessary, cultivating all of the crops which are considered valuable, and being moreover not only an accurate observer, but also accustomed to enter into some one of his books every transaction which occurs on the plantation. His opinion of the value of a rotation has been already given in the first part of the account of Hopeton, but we cannot avoid again quoting it.

"The result of a system of rotation of rice, cotton and 'cane is highly favourable to the increased production of 'each crop. It is particularly so to the rice crop, which 'rarely falls short of seventy bushels to the acre after 'either cotton or cane. The cane crop is generally fine 'after cotton: and cotton after cane, if the cane trash is 'listed in. The advantage is not so manifest in a cotton 'crop following one of rice, particularly, as above noticed, 'if the land has been in rice, several years immediately 'preceding."

In another part of his notes now before us and which will be given in due course, he observes, "seventy 'bushels are frequently obtained when the land has been 'the previous year under dry culture. From that quantity 'it will fall off in four or five years to forty-five and fifty

* Fields left out to rest, are of course excepted, in these remarks.

'bushels if the rice culture be continued without intermis-
'sion." Such has been the result of Mr. Couper's expe-
rience, not of one year but of many. If then, the difference be so great, (varying from 20 to 25 bushels per acre) when a rotation is pursued and when it is not, does it not follow that it would be for the interest of the planter to adopt one, even although the crops which he introduces, should be far inferior in value to that of rice. It requires no great arithmetician to calculate the great gain which would arise from pursuing such a system, if he is as successful in following it as Mr. Couper has been. One thing, however, is absolutely requisite, and that is, that the fields be thoroughly and effectually drained. Rice may grow on land always moist, but no other crop will.

We proceed now to give the mode of cultivating rice at "*Hopeton.*"

CULTIVATION OF THE RICE CROP.

"*Preparation of the Land.*—If the land has been the
'previous year in cotton, the beds are levelled and the
'cotton stalks burnt off, about a fortnight before sowing,
'and the water let in for a week to settle the soil—if the
'previous year in cane, the beds are levelled, and the cane
'roots stacked in heaps, and the water let in for a few
'days to consolidate the soil. If the land has been the
'previous year or years in rice, the preparation depends
'on the fertility of the soil and the absence or presence
'of red rice. If the soil is new and rich and there is no
'volunteer or red rice, the stubble is merely burnt off, and
'the new trenches are opened between the old ones. If
'the land has been reduced by cultivation, the stubble is
'turned deeply under early in the winter; the land kept
'dry until the period of sowing arrives, when if required,
'it is levelled before it is trenched. When there is much
'red rice, the fields are flowed immediately after harvest
'for a week,* then kept dry and the stubble burnt off as
'soon as possible in the fall, to give the birds an opportu-
'nity of picking up the rice. Early in March the fields
'infested with red rice, should be flowed for five days and
'the water drawn: in a fortnight they should be hoed and
'then trenched and sowed. Such fields should be reserv-

* This is always done after a rice crop, whatever may be the state of the field or the subsequent crop.

'ed for the last in sowing, and the object of the flowing is 'to sprout and bring up the red rice before the seed is put 'in the ground.

"The fields are kept dry during the winter months.

"*Trenching*.—The trenches are about four inches wide, 'and are from fifteen to seventeen inches from centre to 'centre: the former distance on the older and the latter 'in the newer fields. On the weaker lands two bushels 'of seed are sowed to the acre; on the stronger from 1¼ to '1½ bushels. Immediately after sowing, the fields are 'flowed from three to five days, until the rice begins to 'sprout. The water is then drawn off. When the 'rice in the rows shows distinctly green, it is hoed 'lightly. At this stage of the growth if much grass 'appears among the rice, the water is let on as deep as 'it can be got, and kept on for a few days until the grass 'is destroyed. The flowing is however avoided, unless 'the land is very grassy, as the young rice suffers from 'it in low spots. We usually avoid the point-flow.

"No further flowing is given until the rice is in the 'fifth and sixth leaves, at this time the fields are care-'fully hoed and hand picked, and after allowing two or 'three days for the wilting of the grass, the water is let 'on as deep as it can be had: after two days it is slacked 'down so as show the tops of the leaves of the rice, at 'which height it is kept for six or eight days, when it is 'gradually drawn off. The fields are now kept dry until 'the first joint has formed, when they are deeply hoed, 'reversing the sods, the water is then introduced and kept 'on from four to six inches deep, being frequently sweet-'ened by drawing off a part of the old and introducing 'fresh water. In this state, it is kept until the shoot is 'formed, when the water is drawn off for a few days, the 'field lightly hoed and carefully hand-picked. The water 'is then returned and kept on as deep as possible, provid-'ed it does not cover the shoot, until a week before har-'vest, when the field is laid dry.

"During the period between sowing and the joint-'flowing, the hoeings are repeated as often as the state 'of the fields and the routine of the work will permit: 'except on new and strong lands, where an overgrowth or 'lodging is expected; on such, the hoeings should be very

'light, and on newly cleared land, hand-picking is some-
'times substituted for the hoe.

"Particular attention is paid to have the fields clean at
'the time when the jointing of the rice commences.

"We have tried flowing from eighteen to twenty-one days,
'when the rice is in the fifth and sixth leaves, and have
'abandoned it from a belief that it checks the growth of
'the rice, without producing any other advantage than
'postponing the next hoeing. When the lands are new
'and excessive growth is apprehended, a deep and long
'flow at this stage has been found useful in checking the
'over luxuriance of the plant. When lodging is appre-
'hended, the tops of the plant are cut off to within a few
'inches of the shoot, as soon as it forms. This operation
'relieves the plant from the weight of the top leaves with-
'out impairing the strength of the stem. Topping has
'been tried at an earlier stage, when the plant was from
'fifteen to eighteen inches high, and all the leaves removed
'to within four inches of the ground; but new leaves shot
'out in place of those cut off, and no advantage appeared
'to result from the operation.

"We usually sow one-half of the land intended to be
'in rice immediately before the first spring-tide in March,
'and the other half before the second. Sometimes the
'later sowings are as late as the first spring-tide of April.
'Generally, however, the seed is in the ground within the
'month of March.

"The harvest usually commences between the 20th and
'25th of August. The fitness for the hook is indicated by
'the grains occupying the lowest inch of the ear becoming
'of the consistency of soft boiled rice. The average crop
'is sixty bushels to the acre. I have made eighty-five
'bushels from a field of thirty-five acres. Seventy bush-
'els are frequently obtained when the land has been
'the previous year under dry culture. From that quan-
'tity it will fall off in four or five years to forty-five and
'fifty bushels of the rice culture, be continued without
'intermission.

"During the growth of the rice, if it appears at any
'time to be suffering from drought, the water is let on for
'one or two tides, and then run off."

Prior to 1833, the rice crops were all sent away to be beat, and this would have been no little labour, had the

large canal, which we have already noticed, not been made use of,—the stack-yard, being one and a quarter miles from the river. Last winter, Mr. Couper had a rice-mill erected, which is propelled by the steam engine used for grinding the sugar-cane, the sugar-house being on one side, and the rice-mill on the other. This crop, therefore, like all the others, is now prepared on the place, and the offal, which is considered of much value by many, is saved for the use of the plantation.

(*To be continued.*)

ART. LIII.—*Remarks on putting down Trunks in River Banks*; *by* Q. E. D.

In continuation of my observations on the best mode of reclaiming marsh or rush land, &c. I propose to make a few remarks on river trunks, and shall go somewhat into detail, as it is a subject of the utmost importance, and one, which I think, is not sufficiently attended to. Of the building of these trunks, I shall say nothing; each of us have a preference as to the mode in which the uprights, ears, and braces should be placed, and this preference I would not disturb: all I contend for as vitally important, is, that the door should fit as close as two pieces of wood can be brought together, and that the trunk should have sufficient length, say 30 feet, to keep the water both in its ingress and egress far from the bottom or foundation of the bank. In fixing upon the site of the trunk, it is usual to find the lowest spot in the field selected, under the entire conviction, that where the natural outlet of the water is, there must necessarily be the best spot for giving it vent. In theory, this is right, but if our experience is of any value (and it has been dearly purchased,) in practice, it is wrong. If you have a creek in the field, (which most commoly happens) it will be the natural outlet, yet it will not be the proper place to put the trunk; no man of observation will commit this mistake more than once. The objections to these low spots as beds of trunks are nume-

rous; they are soft, sloughy and uneven; they want firmness and consistency, are very liable to cave in, while the work of preparation is going on, seldom retain the trunk in the position you place it, and forever remain weak points in the bank, more liable to accidents and casualties than other portions of it. A firm, dry, spot is to be preferred, even if it is a little higher than the rest of the field, for the spade can remedy this objection, and all the evils noticed above be avoided.

Having decided upon the spot, a semicircular bank or half moon, as we term it, is to be made around it either on the inside or outside, (I prefer the latter for many reasons) large enough to resist the tide, and at a sufficient distance from the bank to enable you to work. Some planters do not esteem this precaution essential, and for this very reason I am more anxious to impress the necessity of using it upon those who are commencing their career as river planters. It is not unusual to hear gentlemen talk of cutting the bank and slipping in the trunk in a tide, of the facility with which it is done, and of the uselessness, and even inconvenience of a half moon. All this is easily said, and is, *I believe*, *sometimes* done, but I have never seen it *well done*. Indeed, when we call to mind the size and width of the bank, the depth we have to cut, the probability of its caving; the necessity of levelling the bed with great care, the sinking of the studs and erecting the breast-work, the unwieldy, heavy trunk which is to be floated to its place and buried, and that all this is to be done during the gradual fall of the tide, and must be finished before it rises again, it would seem worse than folly to attempt it. In addition to all this, I will add, that if a large log or root is found in the bed, and nothing is more common, then it is impossible to finish your work in the tide; the bank has to be closed up, your work is all to be gone over again, and a half moon must at last be resorted to. I have seen so much trouble the result of "*slipping in*" river trunks, that nothing would induce me to do it; the chances are always against a successful termination of your labours, and it is a matter, of too much importance, to be done hastily or indifferently. If your bank is a large one (and the base always should be large) your trunk should not be less than thirty feet long, and the

width about three feet in the clear; the uprights, ears and cross pieces should, if possible, be made of cedar out of the swamp, as this wood seldom rots from exposure to air and water; the studs, four in number, should be eighteen feet long, and square, eight inches, if squared at all; though I leave them round, with the bark on. The caps, two in number, should be twenty long, and square, ten inches; these last (caps and studs) should be procured of pond cypress, if it is to be had. The piles, forty-two in number are of pine, (or in fact any kind of wood you can obtain most easily) seven feet long and about the size of a man's leg. These arrangements being made and these materials all collected, we are ready to put down the trunk.

The first step in the process is to sink the studs as far into the ground as either weight or the maul will drive them, before either the bank or margin is touched or cut. This is not the usual plan, but it is by far the best mode of doing it, as we have firm ground on which to stand, instead of the insecure foot-hold which is commonly presented to those whose business it is to raise and sink the studs. Between the studs a sufficient space is left to enable the trunk to float in; the caps are now put on, and we are ready to cut the bank. A clear day and neap-tides offering, we cut both bank and margin to the depth of five and a half feet, and continue this to the river on one side, and the river ditch on the other. Water will spring and we are to keep the work dry either by a pump (which I prefer) or pails. Having reached the depth contemplated, a little water is let in, or thrown in, for the purpose of obtaining a *true water level* and all the inequalities now showing themselves are to be removed, and a smooth, clean surface presented. Three rows of piles (seven in each row) about four inches apart, are driven down three feet from each extremity of the trunk, and the heads of them, if they remain above the bed, are to be cut off, so as not to interrupt the level. If your half moon is outside, the tide will not interfere with the work, and we proceed to roll the trunk, (for it should be built upon logs that will roll) immediately over the spot it is to occupy. Water is now to be let in through the temporary trunk sufficient to fill the ditches, and enable us to saw away the rollers and drop the trunk into the water and stake it exactly where

it is to be buried. Things should be left in this state until the next ebb, and when the trunk grounds, the carpenter with his square, by standing on it, can so arrange it that a perfect level will be obtained. This is the mode I always adopt, and though it may seem difficult in the detail, yet in practice nothing is more simple. But if the half moon is inside, and the flood-tide has commenced, the trunk must be floated into its bed from the river, and there left until the ebb-tide leaves it aground, and enables us to examine its position; for it is always wrong to attempt banking a trunk when it is afloat, as it seldom either assumes or retains the position you wish to give it. The breastwork which is to keep the earth from falling off, is now to be laid down, reaching from one stud to another, and supported by them. The first of these pieces is short, about ten feet, and lays on the trunk itself, the next is longer, and so on, going up until you have reached a point, a little higher than the base of your bank, when the breastwork is to be fifteen feet long. The earth is now to be thrown upon the trunk, and care is to be taken that it is spread equally over the whole surface between the inside and outside breastwork, in order that no excess of weight on either end of the trunk should cause it to settle and lose its level. These circumstances, however trivial they may appear, are matters of much moment, for it is impossible that any trunk can remain tight after its level is lost, however great the attention and care which may have been devoted to the building of it. Earth should be thrown over the trunk, so as to raise it much higher than the adjoining portions of the bank, as it will settle more than one unaccustomed to see it can imagine. The half moon ought to remain for several days around the trunk, in order that the new and fresh earth which has been thrown upon it, may unite with the old bank and become firm before it has to bear and resist the force of the tide. When you are satisfied that this union has taken place, then cut the half moon away, and by throwing the earth composing it on the bank, you are enabled to raise it to a height that defies the highest tide.

I have now, Mr. Editor, concluded all I had to say on the subject of putting down river trunks, and though, to the experienced planter, I may have appeared too minute, yet it is to be kept in mind that my observations are

intended for persons in their noviciate, and that it was necessary to inform them of the detail even at the risk of being tedious. Trusting that if I have committed any errors, (and no doubt I have) either in banking the land or putting down the trunk, I shall be corrected by some of your intelligent correspondents, I will only add, that all which I have stated is the result of my own personal experience and observation, and has been found to meet all of the objects proposed to be accomplished.

I remain, dear Sir, your obedient servant,

Q. E. D.

ART. LIV.—*Observations on the interchange of opinions among Planters—Gama Grass and Hedges; by* N. HERBEMONT.

"Columbia, (S. C.) June 29, 1833.

Dear Sir,—If the following desultory observations are likely to do any good, if admitted into your interesting agricultural periodical, you are at liberty to insert them. The present dearth of matter may cause them to be tolerated, and at any rate, they will help to fill up a page or two when your stock of original matter is exhausted. But, why should you ever suffer from a scarcity of materials for your journal, in a country where all are more or less interested in the success of agriculture, and where the planters and farmers form so intelligent and numerous a portion of the population? This would certainly be incredible were not the fact of its existence too true and too evident to be doubted. A class of intelligent and generally well educated men, can find no difficulty in expressing in writing, their views and experience on the inexhaustible subject of agriculture, with which are connected more or less closely an innumerable variety of subjects in which the whole community, but particularly themselves are vitally interested.

The object of Agricultural Societies is to afford their members opportunities of meeting together, and discussing all those matters which concern essentially their success and the welfare of the whole. That of agricultural publications, journals, &c. must necessarily be that of diffusing more extensively the particulars of their experience, practices and improvements; thereby furnishing a mass of knowledge by which the whole community is necessarily benefited, and they themselves (the planters and farmers) more directly and particularly so. Their daily avocation, and the distance at which they live from one another, makes it impracticable for them to meet and discuss their interests as frequently as would be desirable and beneficial; but an interchange of their views, through the medium of a public journal, is certainly the next best, if not the very best mode of communicating with each other; and, indeed, under their circumstances, it is the only practical mode in which it can be done to any advantage; for private correspondence is too circumscribed to have any but a very partial effect. Although it is very desirable to have very well written essays on the various branches of the science and art of agriculture, the less laboured, either in style or matter, the plain statement of matters of fact or of speculation, that may be supposed to take place when two neighbours meet and discourse on their business, is probably likely to do as much, if not more, than highly polished and learned discussions of the highly gifted scientific men. A plain colloquial style is intelligible to all, and is in ordinary cases perfectly sufficient to communicate to the agricultural public, the improvement, discoveries or beneficial practices in which they all feel an interest. If a farmer, for example, has made the discovery of a new plant which promises advantages, the plain statement of the fact, written just in such a way as he would relate it to one of his neighbours, is probably the best and most extensively beneficial mode of doing it. Take the following instance: Mr. William Ellison, of Fairfield district, discovered some time since, that a grass much celebrated in Mexico and other places, for its productiveness and its nutritive qualities, together with the facility with which it can be cultivated, grew spontaneously on his plantation and its vicinity. He communicated the fact to the public through the *Southern Agriculturist*, dis-

tributed some of the seeds among his acquaintances, and though it is now only a little more than one year since he imparted his discovery, several persons have already become so fully satisfied of the great benefit that will result from the culture of this grass, that they are now making arrangements to procure seed of it that they may cultivate it extensively. This grass called commonly "Gama Grass," (in botany *Tripsacum monostachyon*) is likely soon to wash away the foul blot on our industry which has hitherto made it necessary that we should procure hay from the north to feed our horses! May not this also help us in our exertions to raise in our own State, our butter and cheese, our beef and pork, as also horses and mules, if not for exportation, at least to prevent thereafter the importation of these expensive articles. Our soil and climate are perfectly adequate to the abundant production of all these indispensable articles, it is only required that we set our minds to the task and *persevere in it.*

I heard, last spring, that the canes, after having seeded last fall, had died and left many of the rice-field's banks quite unprotected. They will in due time come up again; but it seems to me, that no plant is better calculated to protect the rice-field banks than the gama grass. This suggestion ought to cause some experiments to be made, the result of which is most likely to terminate in incalculable advantages. The roots of this grass are very large and deep in the ground, and if three rows of it were planted on a large bank, one on the top, and one on each side, it would form such a solid mass that no freshets could effect it. The banks would also thereby be most beneficially occupied, and the fodder made from them be more than sufficient for all the wants of the planter, be they never so numerous. It would certainly be most gratifying to see the plantation-boats bring to the Charleston market, a full supply of blades and gama grass fodder, instead of those of northern hay. That this grass makes excellent hay or fodder, I can amply testify from a small experiment which I am making, and which has induced me to plant it as extensively as I possibly can. My experiment is in high and very sandy land, and it is now six or seven feet high. A part of it I have cut twice, and is ready for a third cutting this season. It grows also, as I am informed, still better on moist land.

Here then, Mr. Editor, is a perennial grass producing the most abundant crops of any grass ever heard of, suited to every soil and situation. Can any thing be more accommodating. It grows admirably in swampy land, and in dry soils, it stands drought better than any plant I ever saw, and grows so rapidly as to admit of being cut five or six times every season. It seems to me, Sir, that it only depends upon us to render our country a land of abundance, replete with the greatest plenty of the good things of this world, together with peace and contentment. It only requires a little attention and industry to set that state of prosperity a growing; for it will grow with our exertions, though these need be only moderate.

I was much pleased, Sir, to see in one of your late numbers, the suggestions of Dr. Joseph Johnson, relative to the inclosing of our fields with hedges, instead of the detestable and expensive worm-fence in general use in this country. We have, most undoubtedly, many native shrubs suitable to this purpose, besides, several exotic ones that are as thrifty here as they can possibly be any where in the world. Of these, I know none superior to the "*Mespilus Pyracantha*," (*"Burning-bush," "Evergreen-thorn,"*) &c. It has the great advantage of being always full at the bottom, at least my experience of twenty years satisfies me of this, that it never becomes naked at bottom, as most other large shrubs and trees; also its being an evergreen, is an advantage. its thorns are strong, long, and sharp, and it is with all, of a rapid growth. Its lower branches being horizontal, take root very readily by being covered with a little earth in the spring. This circumstance renders it unnecessary to plant it for a hedge closer than between two and three feet apart. Besides this, when one has a few rods of such a hedge, he may rapidly increase it by making layers of part of the low horizontal branches, by putting a little earth on them in the spring, and the next winter they will have fine roots and may be transplanted to form another hedge, at least as long as that from which it is taken; thus, in a few years, an extensive plantation may be entirely fenced with a beautiful, durable, and effective live-fence.

I am, dear Sir, your obedient servant,

N. HERBEMONT.

ART. LV.—*Protecting Crops from Birds; by* AN OBSERVER.

Dear Sir,—I crave the attention of your readers to a subject of much importance to the planters of rice and corn. I have observed with much satisfaction, that most planters appoint one or more nurses on their plantations, for the purpose of taking good care of the negro children, while their parents are at work, and believe that the consequence is, an increase of four or five negroes in each hundred annually, in addition to the great gratification of a planter's feelings from such arrangements. But I have also seen many of these interesting little people lost, by the present mode of turning them out to mind birds, without shelter from the sun and rain, and without a chance of drying themselves by a fire as they have been accustomed to do. The elderly, infirm, and convalescent negroes, who are likewise employed in this way, are equally exposed and suffer as much. Many a valuable negro, who might have been useful, if protected from the weather until perfectly recovered, has by this exposure sickened or relapsed, then died, or became incurable. Is not this particularly the case in rice-fields, where they unavoidably are wet from morning to night? After all this risk of life, is not the present plan inefficient? Has it not been said that the third of some crops has been destroyed by birds, and is it not reasonable to suppose that at least eight or ten bushels in every hundred is so destroyed? Do we not see that the birds when driven, fly a few yards only and alight again? That they cannot be driven from a rice-field, even by the numerous negroes occasionally employed to scare them? Do not the negroes themselves trample and destroy a great deal of rice in running after the birds?

Under these difficulties, it is observable that hawks are very efficient in driving away birds—that hawks are valuable to rice-planters, and ought not to be destroyed. It may even be suggested that taking a nest of young hawks and raising them in some part of the rice-fields, at a distance from the family residence, they would continue to inhabit that place, where they had been well fed and taken care of: their screams and the shadow of their wings in

flying round, would do more in driving away other birds, than all the negroes of a plantation. The fear of hawks causes the birds likewise to avoid a place round which the buzzards are flying, their appearance alarms the rice-birds, and drives them off. It has been suggested that the carcase of some animal may be divided into four or five parts, and tied on saplings about the field, so as to keep the buzzards flying in every direction. It may be asked who would kill one of his cattle for such a surpose? Let us inquire into this matter. There is probably no plantation on which a man may not find one or more sick cattle, hogs, or sheep, the value of which would not exceed a dollar or two; let us suppose five dollars as the possible value. The rice preserved on each acre would be worth at least four dollars, and the number of acres protected by the distribution of such a carcase, would be at least twenty-five, showing that one hundred dollars worth of rice might be preserved by the sacrafice of five dollars if necessary. May not one hundred acres be thus preserved by dividing the carcase of an old cow into fifteen or twenty parts? But I contend that this will not be necessary in general—the planter will probably find some old or worthless dogs, some dogs that destroy eggs, poultry or sheep—some negroes dogs, kept nominally to catch raccoons, but actually employed to catch hogs; some of these may be advantageously shot every year, to invite the buzzards to the rice-fields. In addition to which an alligator or two may generally be shot for the occasion.

I beg leave to suggest a system or plan for scaring birds, as useful to the corn planter as to the rice planter, and calculated to protect the health of the negroes alloted to that duty. In the 1st vol. of Lander's Travels in Africa, pp. 297–8, may be found the following information.

"On all the borders of the numerous branches of the 'river as well as on the small islands, vast quantities of corn '(Guinea,) were growing, and it being near the time of har-'vest, it was nearly ripe and waved over the water's edge 'very prettily. Platforms were every where erected to 'the height of, or rather above the corn which grows as 'high as ten or twelve feet. People were stationed on 'these to scare away the numerous flights of small birds

'which do great mischief, and would without this precau-
'tion destroy the hopes of the cultivator. A boy or girl,
'and in many cases, a woman with a child at her breast,
'and even a whole family together, we observed on the
'platform amusing themselves in this manner, without the
'slightest shade or covering of any kind to shelter them
'from the fierceness of the sunbeams, standing erect
'and motionless. Many of them looked like statues of
'black marble, rather than living human beings, but
'others, particularly the women, disregarding their duty,
'were industriously employed in plaiting straw, supplying
'the wants of their children, manufacturing hats, dressing
'provisions, &c. In order the more effectually to frighten
'away the birds, several of the watchers were furnished
'with slings and stones, in the use of which they seem to
'be skilful, besides these, pieces of rope were fastened
'from the platform to a tree at some distance, to which
'large calabashes were suspended, with holes in them,
'through which sticks were passed, so that when the rope
'is pulled they make a loud clattering noise. The cala-
'bashes are sometimes fastened whole to the rope, con-
'taining about a handful of stones, which answer the pur-
'pose of making a noise when put in motion, as well as
'the sticks. To this is often added the hollowing and
'screaming of the watchers, which is dismal enough to
'frighten an evil spirit, and it rarely fails to produce the
'desired effect."

My wish is to improve on this plan, and adapt it to our circumstances. Rice not being so high as Guinea corn, the platform raised on crutches, need not be more than four or five feet high, and about the same square. It should certainly be covered, and another set of crutches six or eight feet longer, will be necessary for the purpose of raising a roof or cover to the platform: both the floor and the roof may be covered with barrel staves, seasoning for the winter. The cords or twines attached to each platform, should be extended about fifty yards, and each attached not to a tree, but to a sapling or hoop-pole, on which may be tied a cow-bell, or other means of making a noise, so that a pull at the string would not only rattle the gourds, but spring the sapling or hoop-pole, and set the bells ringing. The gourds should be scraped within, and each have some scraps of tin, &c. within them; two

or three of them should likewise be in contact to increase the noise. In addition to the gourds and bells, pieces of old cloth and rags may be tied to the strings and poles, so as to be thrown into motion by every pull of the string, and make the birds think that a hawk was coming after them. Every third or fourth platform should have a gun, to be loaded with powder alone, for scaring the birds. If shot be given with the powder, the dead and wounded birds should be left where they fall, for the purpose of attracting the hawks and buzzards.

The platforms, each will have from four to eight strings radiating from it to hoop-poles about fifty yards distant. These forming a circle round the platform will extend their alarming noise twice that distance, so that at least six or eight acres will be attended with ease and effect, by one in the platform, without fatigue or exposure—by one unfit for other plantation work—by even a woman in the advanced stages of pregnancy. There are now seldom less than one negro to each acre, running in every direction throughout the rice, trampling, breaking, and shelling it, frequently doing nearly as much harm as the birds.

I have seen corn-fields covered with strings of different-kinds—strips of bark, plough-lines, garden-lines, and old apron strings, for the purpose of keeping off the crows, and with some effect, or it would not continue to be practised. Let these planters improve the plan by adding to their strings the rags, gourds, cow-bells, quart pots, and frying pans, with some one on a platform to set them in motion, and I warrant that they will find great advantage from it.

PART II.

SELECTIONS.

Art. LIV.—*The Vices, and Disagreeable or Dangerous Habits of the Horse.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 377.)

Backing or Gibbing.—One of the first species of restifness, taking them in alphabetical order, is backing or gibbing.—These are so closely allied that we hardly know how to separate them. Some horses have the habit of backing at first starting, and that more from playfulness than desire of mischief. A moderate application of the whip will usually be effectual. Others, even at starting, exhibit considerable obstinacy and viciousness. This is frequently the effect of bad breaking. Either the shoulder of the horse had been wrung when he was first put to the collar, or he had been foolishly accustomed to start in the break *up-hill*, and, therefore, all his work coming upon him at once, when it being much more difficult to draw the break up-hill, than to back and let it run down-hill, he gradually acquired this dangerous habit.

A hasty and passionate breaker will often make a really good tempered young horse an inveterate gibber. Every young horse is at first shy of the collar. If he be too quickly forced to it, he will possibly take a dislike to it, that will occasionally show itself in the form of gibbing as long as he lives. The judicious horse-breaker will resort to no severity, even if the colt should go out several times without touching collar. The example of his companion will ultimately induce him to take to it voluntarily and effectually.

A large and heavy stone should be put behind the wheel before starting, when the horse, finding it more difficult to back than to go forward, will gradually forget this unpleasant trick. It will likewise be of advantage, as often as it can be managed, so to start that the horse shall have to back up-hill. The difficulty of accomplishing this will soon make him readily go forward at once. A little coaxing, or leading, or moderate flagellation, will assist in accomplishing the cure.

When, however, a horse, thinking that he has had enough of work, or has been improperly checked or corrected, or beginning to feel the painful pressure of the collar, swerves, and gibs, and backs, it is a more serious matter. Persuasion should here first be tried; and afterwards, reasonable coercion, but no cruelty: for the brutality which is often exercised in attempting to compel a gibbing horse to throw himself habitually into the collar, never yet accomplished the purpose. The horse, may, perhaps, be whipped into motion, but if he has once begun to gib, he will have recourse to it again whenever any circumstance displeases or annoys him; and the habit will be rapidly, and so completely formed, that he will become insensible to all severity.

It is useless and most dangerous to contend with a horse determined to back, unless there is plenty of room, and, by tight reigning, the driver can make him back in the precise direction he wishes, and especially up-hill. Such a horse should be immediately sold, or turned over to some other work. In a stage-coach as a wheeler, and particularly as the near-wheeler; or, in the middle of a team at agricultural work, he may be serviceable. It will be useless for him to attempt to gib there, for he will be dragged along by his companions whether he will or no; and, finding the inutility of resistance, he will soon be induced to work as well as any horse in the team. This reformation will last while he is thus employed, but, like restifness generally, it will be delusive when the horse returns to his former occupation. The disposition to annoy will very soon follow the power to do it. Some intances of complete reformation have occurred, but they have been rare.

When a horse, not often accustomed to gib, betrays a reluctance to work, or a determination not to work, common sense and humanity will demand that some consideration should be taken, before measures of severity be resorted to. The horse may be taxed beyond his power. He soon discovers whether this is the case, and by refusing to proceed, tells his driver that it is so; and the utmost cruelty will not induce many horses to make the slightest effort, when they are conscious that their strength is inadequate to the task. Sometimes the withers are wrung, and the shoulders sadly galled; and the pain, which is intense on level ground and with fair draught, becomes insupportable when he tugs up a steep acclivity. These things should be examined into, and, if possible, rectified; for, under such circumstances, cruelty might produce obstinacy and vice, but not willing obedience.

Those who are accustomed to horses know what seemingly trivial circumstances occasionally produce this vice. A horse, whose shoulders are raw, or that have frequently been so, will not start with a cold collar. When the collar has acquired the warmth of the parts on which it presses, the animal will go

without reluctance. Some determined gibbers have been reformed by constantly wearing a false collar, or strip of cloth round the shoulders, so that the coldness of the usual collar should never be felt; and others have been cured of gibbing by keeping the collar on night and day, although the animal is not able to lie down so completely at full length, which the tired horse is always glad to do. When a horse gibs, not at starting, but while doing his work, it has sometimes been useful to line the collars with cloth instead of leather; the perspiration is readily absorbed, the substance which presses on the shoulders is softer, and it may be far more accurately eased off at a tender place.

Biting.—This is either the consequence of natural ferocity, or a habit acquired from the foolish and teasing play of grooms and stable boys. When a horse is tickled and pinched by thoughtless and mischievous youths, he will first pretend to bite his tormentors; by degrees he will proceed farther, and actually bite them, and, very soon after that, he will be the first to challenge to the combat, and without provocation seize some opportunity to gripe the incautious groom; and then, as the love of mischief is a propensity too easily acquired, this war, half playful, and half in earnest, will become habitual to him, and will degenerate into absolute viciousness. Nothing can here be done in the way of cure; kindness would aggravate the evil, and no degree of severity will correct it. Prevention, however, is in the power of every proprietor of horses. While he insists on gentle and humane treatment of his cattle, he should systematically forbid this horse-play. It is that which can never be considered as operating as a reward, and thereby rendering the horse tractable; nor does it increase the affection of the animal for his groom, because he is annoyed and irritated by being thus incessantly teased.

Getting the Cheek of the Bit into the Mouth.—Some horses that are disposed to be mischievous try to do this, and are very expert at it. They soon find what advantage it gives them over their driver, who by this manœuvre loses almost all command. Harsh treatment is here completely out of the question. All that can be done is, by some mechanical contrivance, to render the thing difficult or impossible, and this may be managed by fastening a round piece of leather on the inside of the cheek of the bit.

Kicking.—This, as *a vice*, is another consequence of the culpable habit of grooms and stable-boys of teasing the horse. That which is at first an indication of annoyance at the pinching and tickling of the groom, and without any design to injure, gradually becomes the expression of anger, and the effort at mischief. There is no cure for this vice; and he cannot be justified who keeps such a kicking horse in his stable.

Some horses acquire a habit of kicking at the stall or the bail, and particularly at night, from mere irritability and fidgettiness. The neghbouring horses are disturbed, and the kicker gets swelled hocks, or some more serious injury. This is also a habit very difficult to correct if suffered to become established. Mares are far more subject to it than horses.

Before the habit is inveterately established, a thorn bush or a piece of furze fastened against the partition or post will sometimes effect a cure. When the horse finds that he is pretty severely pricked he will not long continue to punish himself. In confirmed cases it may be necessary to have recourse to the log, but the legs are often not a little bruised by it. A rather long and heavy piece of wood attached to a chain is buckled above the hock, so as to reach about half way down the leg. When the horse attempts to kick violently, his legs will receive a severe blow from this, and the repetition of the blow will soon teach him to be quiet.

A much more serious vice is kicking in harness. From the least annoyance about the rump or quarters, some horses will kick at the most violent rate, and destroy the bottom of the chaise, and endanger the limbs of the driver. Those that are fidgetty in the stable are most apt to do this. If the reins should per chance get under the tail, the violence of the kicker will be most outrageous; and while the animal presses down his tail so tightly that it is almost impossible to extricate the reins, he continues to plunge until he has demolished every thing behind him.

This is a vice standing foremost in point of danger, and which no treatment will often conquer. It will be altogether in vain to try coercion here. If the shafts are very strong and without flaw, or if they are plated with iron underneath, and a stout kicking strap used, which will barely allow the horse the proper use of his hind limbs in progression, but not permit him to raise them sufficiently for the purpose of kicking, he may be prevented from doing mischief; or if he is harnessed to a heavy cart, and thus confined, his efforts to lash out will be restrained: but it is a very unpleasant thing frequently to witness these attempts, although ineffectual, to demolish the vehicle; and the shafts or the kicking strap may possibly break, and extreme danger may ensue. A horse that has once begun to kick, whatever may have been the original cause of it, can never be depended on again; and he will be very unwise who ventures behind him.

Unsteadiness whilst being mounted.—When this merely amounts to eagerness to start (very unpleasant, indeed, at times, for many a rider has been thrown from his seat before he was fairly fixed in it,) it may be remedied by an active and good horseman. We have known many instances in which, while the elderly, and inactive, and fearful man, has been making more than one ineffectual attempt to vault into the saddle, the

horse has been dancing about to his annoyance and danger; but the animal had no sooner been tranferred to the management of a younger and more agile rider, than he became perfectly subdued. Severity will here, more decidedly than in any other case, do harm. The rider should be fearless; he should carelessly and confidently approach the horse, mount at the first effort, and then restrain him for a while, patting him, and not suffering him to proceed until he becomes perfectly quiet.—These horses should not be too highly fed, and should daily have sufficient exercise.

When the difficulty of mounting arises not from eagerness to start, but unwillingness to be ridden, the sooner such horse is disposed of the better. He may be conquered by a determined rider, but a skilful and determined horseman alone will manage him; and even he will not succeed without frequent and even dangerous contests that will mar all the pleasure of the ride.

Rearing.—This sometimes results from playfulness, carried indeed to an unpleasant and dangerous extent; but it is oftener a vice, and is a desperate and frequently successful effort to unhorse the rider. The horse that has twice decidedly and dangerously reared, should never be trusted again, unless indeed it be the fault of the rider—unless he has been using a deep curb and sharp bit. Some of the best horses will contend against these, and then rearing may be immediately and permanently cured by using a snaffle bridle alone.

The horse-breaker's remedy, that of pulling the horse backward on a soft piece of ground, is worthy of him, and would be practised only by reckless and brutal men. Many horses have been injured in the spine, and others have broken their necks, by being thus suddenly brought over; while even the horse-breaker, who fears no danger, is not always able to extricate himself from the falling horse. If rearing proceeds from vice, and is unprovoked by the bruising and laceration of the mouth, it fully partakes of the inveteracy which attends the other divisions of restiveness.

Running away.—Some headstrong horses will occasionally endeavour to bolt with the best rider. Others, with their wonted sagacity, endeavour thus to dislodge the timid or unskilful. Some are hard to hold, or bolt only during the excitement of the chase; others will run away, prompted by a vicious propensity alone. There is no cure here. That method which affords any probability of success, is to ride such a horse with a strong curb and sharp bit; to have him always firmly in hand; and if he will run away, and the place will admit of it, to give him (sparing neither curb, whip, nor spur) a great deal more running than he likes.

Z.

(To be continued.)

ART. LV.—*On Gardening—No. 3; by* ALEXANDER GORDON.

[FROM THE GENESEE FARMER.]

A due attention to gardening operations, during the ensuing month, (April,) is of the utmost importance, as many crops require to be then sown, which could not be done, at any other season, with so much advantage, or with such a probability of success. As the art of gardening had its origin in the supply of a primitive want, to be consistent it is proper that we cultivate *necessaries* before *luxuries*. I shall, therefore, in the present essay, confine myself to the description, cultivation, &c., of such vegetables as require to be sown forthwith.

Peas.—General Remarks.—There are but few vegetables which rank in higher estimation than the *pea*, and a considerable space should be dedicated, in every garden, to its cultivation. For early crops, the most proper situation is a warm sheltered border. The soil best adapted for the pea is one moderately rich, for the early sorts. For the later and tall growers, a deep friable loam is peculiarly calculated for growing them in perfections. In applying manure for this vegetable, it ought to be perfectly decomposed, for "peas are not assisted, but hurt, by unreduced dung recently turned in."

Estimate of sorts—In making a selection of the sorts to be grown, various circumstances must be taken into consideration. Such as early returns, dwarf, or tall sorts, for the pea varies from less than one to eight feet in height; and as the taller growing sorts must be supported by sticks, branches of trees, or other artificial means, the additional expense of labour thus incurred, should in the first instance be duly considered. It fortunately happens, that several dwarf varieties will bear comparison, in point of flavour, and nearly in productiveness, with the taller growing sorts, if we except the marrowfats: particularly "*Knight's Tall and Dwarf Marrows*," which possess great merit as respects flavour and produce. A knowledge of the heights to which the different sorts attain, is of course very essential to every individual who grows this vegetable, and I give the following data, which is a fair criterion:

Knight's tall Marrowfat,	6 to 8 feet.
Knight's dwarf do.	4 feet.
Bishop's early Prolific,	9 inches.
Double blossom Early Frame,	3 feet.
Dwarf blue Imperial,	2½ to 3 feet.
Blue Prussian,	2 feet.

There are many sorts of this esteemed vegetable, and but very few which may not be cultivated with advantage. Still, a mul-

tiplicity of sorts can answer no good purpose for general use. The above six sorts combine every requisite, as respects earliness, regular succession, properties, and habits of growth.

Cultivation.—Draw drills about three inches deep, and the height of the respective sorts must regulate the distance between the rows, viz:

Those 6 feet high,	.....	4 feet.
3 do	do.	2½ do.
2 do.	do.	2 do.
1 do.	do.	1 do.

Cabbage.—In last week's paper, the method of sowing this vegetable on a dung bed was described; but when that plan is inconvenient, dig a piece of ground in a sheltered situation, fully exposed to the sun, and sow the seeds in the same manner.

Estimate of sorts.—The drumhead variety seems to be the principal sort, in general cultivation, in western New-York. But I trust the period is not far distant, when the respective merits of vegetables will be judged and appreciated by their *qualities*, not their *size*. Who that are acquainted with the delicious varieties, *Early York*, *Emperor*, *Penton*, *Imperial*, *Sugar Loaf*, &c. would prefer the *Drumhead*, which, as a table vegetable, is inferior to every other sort of cabbage. I have placed the different sorts in priority according to their respective merits in my estimation.

Carrots.—General Remarks.—This vegetable may be sown either *broadcast* or in drills. Now, as respects the merits of these modes of culture, I shall here advance my opinions on this important subject. All garden crops usually raised from seeds, and which do not require to be transplanted, should, without an exception, be sown in drills. In gardening, this is a maxim, which holds good in every country and in every climate; and if it is necessary in the *humid* atmosphere of England, it consequently must be more important to the *arid* climate of the United States. It is a fact placed beyond the question, that the soil in a loose or porous state, resists the influence of the sun's rays more effectually, than if it is allowed to get *saddened*. The advantage, therefore, of sowing in *drills* must be evident to the most superficial observer; for with crops so arrranged, the soil can be stirred much deeper, when the hoe works along a continued straight line, as it does between rows, than it can be when worked in curves, or irregular roundish spaces of limited extent, as it must necessarily do among crops sown in broadcast.*

Estimate of sorts.—The *Albringham* carrot is of excellent quality, and, with the exception of the *Long Surrey*, is the best

* It should be particularly remarked, that, although such observations as the above are advanced under the article *carrot*, they are equally applicable for all crops which require the like system of culture.

calculated for winter use, and for field culture. The latter variety grows rather larger, and is of a deeper colour, and consequently is, for table use, generally preferred.

Cultivation.—Sow in a deep sandy soil, in drills fourteen inches apart, and cover about one inch.

Very respectfully,

ALEXANDER GORDON.

Rochester Nursery, March, 26, 1833.

ART. LVI.—*Ruta Baga; by* B.

[FROM THE GENESEE FARMER.]

To those who wish to try the Swedish turnip, and desire information as to its culture, we submit the following considerations, the result of some years successful experience with this root.

The *soil* best adapted to the Swedish turnip is one of loose texture and dry, inclining to sand, gravel or loam. It should be rich, well pulverized and clean. A clover ley, covered with yard manure previous to its being ploughed under, is to be preferred.

The *preparation* for the crop consists in one perfect ploughing, if a ley, a faithful harrowing, and the roller may be applied between the ploughing and harrowing with benefit.

The *season* for *sowing* is from the 25th of June to the 5th of July. A cutting of early clover may be first taken off the ground.

The best *method of sowing* is with the drill harrow, an implement which costs ten or twelve dollars, and which comes in use for other purposes, in drills two and a half feet apart. With this a man will put in four or five acres a day. The crop may also be sown broadcast, or drilled in with a line and hoe though the operation is more tedious, and, when sown broadcast, the expense of cleaning and thinning materially increased.

The *quantity of seed* requisite for the acre is one pound—cost six or eight shillings—though if well drilled, half this quantity will suffice.

The *after culture* consists in thinning the plants and keeping the crop free from weeds. The plants should be thinned to eight or ten inches, as soon they show the second or third pair of leaves, and it is important to have the first weeding performed

early, as this not only, benefits the crop, but saves subsequent labour.

The *implements* best adapted to the turnip culture are the cultivator, or horse hoe, and turnip hand hoe. The first is passed between the drills as soon as the plants show their second pair of leaves, and may be repeated at intervals with little expense and manifest advantage. It destroys the weeds, if applied in time, except on a strip of two or three inches where the plants grow, pulverizes the surface, and renders the soil permeable to atmospheric and solar influence. The operation of cleaning is finished with the hand hoe, the cutting part of which may be likened to the blade of a thin case knife, the two extremities of which are drawn out, turned up, united, and form the shank to attach the hoe to the handle. The advantages of this hoe are, that it does not gather the dirt and weeds, and may be drawn along the drills as far as the arms extend without being raised, and across the drill, between the plants to be retained, and almost wholly supersedes hand weeding. Two cleanings with the hoe generally suffice.

Gathering the crop is performed with the greatest economy of labour, by drawing the turnips by hand, and laying them separately across the drills, the roots of two adjoining rows towards each other, and then with a heavy knife, bell-hook or like implement, strike off the tops with a blow as they lay, which is managed with great expedition. The roots are first gathered, and taken to the pit or cellar, and the tops, which are abundant, are then raked into small piles, and taken to the yard for the farm stock as they are wanted.

To secure for winter pits are made in the field, upon dry ground, two and a half feet broad, and as long as may be convient, and of two to four feet in depth. These are filled, and the roots piled above the surface, in a roof-like form, till they terminate in a ridge. A slight covering of straw is then given, and the whole covered with earth, two feet or more in depth. A salutary precaution is then to make holes, with a bar, at intervals of three or four feet, upon the ridge, through the covering, that the rarified air which will be generated may escape. This may be partially closed with a wisp of straw. Another precaution is to cover the mound with a court of yard manure early in December, the better to exclude the frost.

The *product*, under good management and on a suitable soil, is seldom less than six hundred bushels per acre, and often much more, of roots, besides a heavy burthen of tops, of which neat cattle are very fond.

Use.—This turnip is far more nutricious than the common turnip, keeps much longer, and is greedily devoured, cooked or raw, by horses, cows, sheep and hogs; and is withal a very excellent vegetable for the table, particularly from January to June.

We are still feeding to cows and oxen (May 23) of the crop of last year. Our cows have ate them daily for nine weeks, and yet the turnip taste has not been perceptible either in their milk or butter—*the cows having daily access to salt.* To the sheep husbandman this root will be found peculiarly serviceable, if fed to his flock in winter and spring.

Of all root crops, if we except the common turnip, this is the least exhausting, occupies the ground the shortest time, is cultivated with the least expense, is saved with the least care, and we think makes the greatest return in food for animals. B.

Art. LVII.—*Myrtle-Wax or Bay-Berry.*

[FROM THE GEORGETOWN D. C. GAZETTE.]

We beg leave to call the attention of our readers to the following communication in relation to the myrtle-wax, from a very scientific correspondent, who has investigated the subject himself, and left with us various specimens. It will be found that the cultivation of the myrtle or bay-berry, can be made a very profitable business to the cultivator, besides doing a lasting good to the community.

The vegetable wax called bay-berry in the Northern, and myrtle-wax in the Southern parts of the United States, is the produce of a shrub called by botanists *Myrrica Cerlifera*, which sometimes grows to the size of a small tree, and is found abundantly along the coast, from Maine in the North, to Texas on the Gulf of Mexico. The wax is extracted from this shrub by collecting the berries, boiling them with water, and bruising them at the same time, by which the wax will rise to the top as a thick oily scum, easily separated, which when cold, turns out a moderately hard substance, of a green dingy colour. After chemical investigation, that substance has been found to resemble bees-wax so closely in the most important properties, that they may be classed under the same genus of chemical bodies.

Until now, the use of this wax has been very limited: the farmers pick up in swamps and the woods a sufficient quantity to supply themselves with candles; and if there is any surplus they send it to market in New-York, Boston, or other Northern places, where it is bought by candle makers, who mix it with their tallow, in order to correct, in summer, the extreme softness of their candles.

Notwithstanding the abundance of its growth, the picking up of the berries among swamps, thick wood and mire, is so laborious that people who have attempted the collection of the wax as a special business and matter of trade, have found that one single bushel of berries is the utmost a stout and active man can collect in one day's work, hence its price in market is very high, fluctuating between 18 and 25 cents a pound.

The object of this publication is to invite the attention of farmers to the cultivation of the shrub affording the myrtle-wax, in order to bring its price down to that of tallow. It is obvious that should the shrubs be collected in one field, consequently ready at hand—it is obvious, I say, that the same man, who, under the difficulty of wandering in swamps, wood and mire, can collect but one bushel, should be able when he finds the shrubs gathered together in the same field, to pick up in the same space of time, from three to four bushels—consequently deliver his wax at a price proportionably reduced; that is to say, from 25, to 8, 9, or 10 cents per pound.

The question now is, to investigate what will be the nett produce of an acre planted in myrtle-wax, the wax selling at the reduced price of 10 cents per pound.

Let us suppose each shrub planted at two and a half feet from each other, there will be in one acre 6724 of them: supposing, next, the average product of each shrub to be only one pint of the berries—then the whole crop will amount to 6724 pints, making up 105 bushels. Now experience has shown by those who follow the trade, that the quantity of wax obtained from a bushel of berries, averages from 5 to 8 pounds, then our 105 bushels of berries would yield 630 pounds of wax, which at 10 cents a pound, tallow price, would make $63.

As we have stated already, one man will pick up in a field from three to four bushels in one day, it follows that the picking of the whole 105 bushels will require the labour of a hand during the whole month; admitting $18 for the wages and finding—then $18 deducted from $63 the value of the crop as before stated, the balance of $45 will be the net profit accruing to the farmer.

Besides such a valuable income, this culture receives additional recommendations from the following circumstances:—

1st. It grows in the worst soils, especially if damp and sandy.

2d. It requires no fences, as the cattle do not meddle with it.

3d. Once planted, it requires no attendance except in picking time.

4th. The picking may be performed by boys, girls, old men and old women, who else would be useless on the plantation.

5th. By a process discovered lately the myrtle-wax may be bleached to a degree of whiteness equal to that of bees-wax. This process adds only five cents per pound to the original price.

is done in a short time, and within the power of every individual to perform

6th. A soap equal, if not superior to any shaving or fancy soap imported from Europe can be manufactured of the myrtle-wax.

We may say in conclusion, that by cultivating the myrtle-wax, a most important staple will be introduced into the United States. The most probable consequences of this introduction will be, 1st. That this wax will supersede tallow in making candles, on account of its superior hardness and cleanliness; next, the establishment of bleaching and soap manufactories on the largest scales—that it will become an article of exportation, especially to the West-Indies, and however abundant it may become in the market, it will always meet with a ready sale.

Art. LVIII.—*Value of Cocoons—their quality and preparation for market.*

[FROM THE AMERICAN FARMER.]

So many inquiries are daily addressed to us for the price of cocoons, the manner of preparing them for market, &c. that we deem it proper to give the information in this way. It is impossible to state the exact value of cocoons except upon inspection. They may appear to the unpractised eye to be of the first quality, being of the largest size and of the firmest texture, and yet worth nothing for reeling; because, they may be *double*, (spun by two or three worms,) which so interlock their fibres as to render them incapable of being reeled; or they may have been injured in the process of curing, or smothering the insects, which cannot be detected by any one but the reeler, or one skilled in the business Both these descriptions of cocoons are worthless to the reeler. The same well formed and large cocoons, though free from the above faults, will be more or less valuable according to the manner and degree of curing. For example, a parcel of cocoons of first quality as to size and form, if just cured with the body of the crysalis moist and fresh, will be worth twenty-five per cent. less than a like parcel with the crysalis perfectly dry; because, in the first place there is less weight of silk fibre in the pound of cocoons, and in the second place the moisture of the crysalis renders them extremely liable to mould. All

these considerations, therefore, renders it impossible for us to say what cocoons are worth. The purchaser must *examine* them before he can say what he will give for them, and his judgment will be regulated by the proportion of *double*, imperfect, or injured cocoons the parcel may contain, compared with the good sized, well formed, and well cured ones. If the cocoons are of good size, have been well cured, and the crysalis well dried, and if there are no double, imperfect or injured cocoons in them, they will be worth fifty cents a pound; and less in proportion to the number of faulty ones, till the value will be reduced to twenty-five cents a pound—and it would be not worth while for the reeler to trouble himself with any that would not be worth the latter price.

Cocoons of the first quality can only be produced by strict attention to the worms, to the curing, and preparing for market. The little "Treatise on the Culture of Silk," by the editor of the American Farmer, for sale at his office, price twelve and a half cents, contains all necessary directions on the subject. The worms must be kept supplied with as much food as they will consume, fresh and free from moisture; they must be kept clean, dry, and well aired. When they begin to spin they should have proper mounting frames, and not be crowded for room in forming their cocoons—this is necessary to prevent double cocoons. As soon as the cocoons are finished they should be cured by baking, steaming, or exposure to the sun. In baking them great caution is necessary to avoid scorching them. In steaming, equal caution is necessary to avoid discomposing the fibre; they should not be touched or stirred till they have become dry and cold. In curing them in the sun, care must be taken that they are exposed a sufficient length of time to kill and dry the crysalis. Whatever mode of curing is adopted, the cocoons should be exposed to the sun or spread out in a dry airy place to dry perfectly; and they should never be packed up for market or future use till the crysalis shall have been found (by taking several out of them) to be perfectly dry. When they are ready to pack up for market, they should be examined, all faulty ones taken out, and then packed in barrels or boxes, by putting in just as many as the box or barrel will hold by gentle shaking down, but without pressure; a few *cloves* or other pungent aromatic should be put in each barrel or box to prevent mildew; and the box or barrel conveyed to market with as little agitation as possible. If the cocoons are mashed or much dinted, they cannot be reeled.

The greater part of the cocoons that have been offered for sale, were not worth any thing. Probably nine-tenths that are raised are so imperfect that the reeler can make nothing of them. The cause of their imperfection may be always traced to the carelessness and inattention of those who attended the worms.

If the worms are stinted in their food; if wet or injured leaves have been given them; if they have been crowded on the tables or mounting frames, or disturbed after they began to spin; the cocoons will be more or less imperfect, according to the degree of such bad treatment. The best cocoons are always made by worms that begin to spin, on or before the twenty-eighth day after they were hatched; and they can only be made to do so by giving them a full supply of fresh clean leaves; keeping them clear of litter, not crowded on the tables, and airy. Good cocoons are made by worms that begin to spin on or before the thirty-fifth day; but those that are longer in beginning to spin have been so stinted in food, or so retarded by unfavourable weather, that their cocoons will always be imperfect. Perfect cocoons will generally weigh from the sixteenth to the twentieth of an ounce. We have often had them to weigh the sixteenth of an ounce, and would not call any perfect that did not weigh the twentieth. But, good cocoons when the crysalis is perfectly dry, will often be found to weigh only the twenty-eighth to the thirtieth of an ounce. The degrees of quality of imperfect cocoons are so various, that it is impossible to describe them. If they are soft and flimsy, though of full size, they are to be considered imperfect, according to the degree of softness, and depreciated in value, in the same proportion. If one end is soft, or not perfectly occupied by the fibre, appearing to have a hole in them partially covered or open, they are to be rejected as bad. If they are stained, which is often the case, by the crysalis having passed into the fly state and made an attempt to emerge by discharging a fluid on the inside, before it was killed, they are to be rejected as bad. And, finally, if the worms are sickly, their cocoons will be flabby, and generally small, light and imperfect. A first rate cocoon will weigh the sixteenth of an ounce, be of an oblong oval form, firm texture, and granulated surface; and according to the degree of variance from these qualities will be the imperfection of imperfect cocoons.

Art. LIX.—*On Summer Pruning the Vine.*

[FROM THE GENESEE FARMER.]

In the *Genesee Farmer*, vol. ii. p. 317, I advanced some remarks on the propriety of paying a due attention to pruning the vine in summer. This is the proper season for this operation being performed as respects the principal shoots, although the secondary growths will require attendance during the whole of the summer; but having given my ideas fully on the subject in the number alluded to above, a recapitulation would be unnecessary here. The substance, however, was—

That during the growth of the vine in summer, the bearing vines for *next* season must be selected: all extraneous shoots taken away as soon as they appear, and *never, on any account,* to detach a healthy leaf from those vines bearing fruit in the present season, or those intended for bearing fruit the ensuing season.

There is also another circumstance which demands particular attention at this time. When we commence growing any sort of fruits, (it is immaterial what,) I believe it will be universally admitted that the objects in view is to obtain a large crop of good fruit. This being the object, the means by which it is to be obtained merit attention. As respects the grape vine it is decidedly under our control. If the vine is in a vigorous and flourishing state, judicious spring and summer pruning, and properly *thinning* of the bunches, are the principal points requisite to ensure success. To those unacquainted with this cultivation of the grape, it may appear rather hazarding a *good* crop to thin and regulate the bunches; but there can be no question that the value of grapes will invariably depend more on the weight of each individual bunch, than by a number of bunches from the same space of surface producing equal weight. An eminent writer on horticulture has said—"select and compare fifty single berries" (he might with justice have said the same as to bunches) "of the largest size with an hundred others of the same aggregate weight, equally in a state of maturity, the preponderance in the scale of merit will be given, I apprehend, by all competent judges, to be fifty instead of the hundred." These sentiments are in perfect unison with my own on this subject; and taking it for granted, it is a general maxim. The point then to be considered is, how is this maximum of merit to be obtained? As before observed, this is easily accomplished with a healthy vigorous vine, by a practical man; but I am not writing for practical men—I write for those who are desirous to enrich their gardens by simple means and at a small expense. The grand secret in producing a fine large bunch of grapes is, not to overload the vine—to regulate the bunches, leaving them as far as practicable equi-distant from each other; divesting the tree of all the lateral shoots which would prevent a free circulation of sun and air, and deprive the fruit of its proper nourishment. But query—what is the proper distance? Ay, there's the rub. This is a point on which no strictly accurate idea can be conveyed by written instructions; but as a general data I shall give the following, which I consider a fair criterion for a healthy vigorous vine. Take the Isabella for instance. To every bunch on an Isabella grape I would allow a space of about one foot square; and for smaller, or less free growing sorts, a space of about nine or ten inches square. When the vine has the least tendency to unhealthiness they must be thin-

ned in a much greater degree, or death will inevitably ensue. It would be inconsistent to expect a sick man to perform the same labour and bear the same burdens as another man in health and vigour; and the comparison is just the same with a sickly vine; if its renovation is desirable, the less fruit it is allowed to bear, the sooner will this be effected.

ART. LX.—*On the Means of prolonging the Duration of valuable Varieties of Fruits; by* THOMAS A. KNIGHT, Esq.

[FROM THE LONDON GARDENER'S MAGAZINE.]

Mr. Knight believes that all the constitutional properties of every variety of fruit are contemporaneously inherent in all the plants which can be made from the buds of that variety, if taken as they usually are from the branches, be the mode of multiplying the buds of these branches into plants what it may. No trees of any variety "can be made to produce blossoms or fruit, till the original tree of that variety has attained its age of puberty; and under our ordinary modes of propagation by grafts and buds, all [the individual plants of any given variety, as we understand it] becomes subject, within no very distant period, to the debilities and diseases of old age. It is therefore desirable that the planter should know at what periods of their existence varieties of fruits are most productive and eligible; and by what means (if any exist) the deterioration of valuable varieties may be prevented or retarded." Mr. Knight has been accustomed to consider "that each variety possessed its greatest value in its middle age," but now believes, "that in vegetable as in animal life, the most prolific period is that which immediately succeeds the age of puberty." Out of a good many experiments which led Mr. Knight to this conclusion were these:—From seedling pear trees twenty years of age, and which had borne their first fruit in the preceding autumn, he, in July, 1828, took from the extremity of their leading branches buds, and inserted them into seedling pear stocks, then only four months old. Many of these budded plants, although not transplanted, nor subjected to any peculiar mode of treatment, produced blossoms abundantly vigorous in the spring of 1831, and consequently at but three years from the date of their springing from the ground. Mr. Knight remarks:—"I never previously saw, and I do not think that any other person has seen, in this climate, fruit produced by pear trees at so early an age. I had previously made the same experiment with apple trees, with the same results." Mr. Knight laid some branches of a plum tree, which had not attained the age of puberty, which (as he expected) freely emitted roots; but he found, contrary to his expectation, that the young shoots which these layers had produced afforded, in the following

spring, much blossom. The variety of plum experimented on, Mr. Knight believes to be one exceedingly productive of blossoms: "but," he adds, "I doubt much if such blossoms would have appeared, if the variety had been a century old." Thus, while Mr. Knight hence infers that grafts or seeds taken from the bearing branches of very young seedling trees afford trees capable of bearing freely at a very early age, and, in consequence of their usefulness, likely to continue to grow with health and vigour; yet he readily admits that this information will not subserve the object of prolonging the duration of existing varieties of fruits, if every part of seedling trees in the same degree affected by age. This, however, Mr. Knight states, is not the case; for "the decay of the powers of life in the roots of seedling trees is exceedingly slow, comparatively with [the decay of the powers of life in] the baring branches. Scions [shoots] obtained from the roots of pear trees of two hundred years affords grafts which grow with great vigour, and which, in many cases, are covered with thorns, like young seedling stock; whilst other grafts, taken at the same time from the extremities of the branches of such trees, present a totally different character, and a very slow and unhealthy growth. I do not, however, conceive that any scion [shoots] which thus springs from the root of an old tree possesses all the powers of a young seedling tree; but it certainly possesses no inconsiderable portion of such powers; and I have proved such scions to be capable of affording healthy trees of a considerable size.

"If grafts or buds were taken from such scions [shoots] on their first emission, [from the roots,] much time would elapse before any blossom would be produced; but, if buds were not taken from such scions [shoots] till the branches attained the age of puberty, no loss of time whatever would subsequently occur.

"The branches of the plum tree, in the experiment above mentioned, emitted roots just at the period when they had attained the age of puberty; and I do not doubt but that scions [shoots] from the roots of these will spring from the soil, in full possession of all the powers attached to the branches from which they derived their existence. My own experience leads me to think that trees of the pear, the apple, and the plum may be better raised by layers and cuttings of the roots, than by the methods usually practised, and at a less expense."

Mr. Knight remarks, in conclusion, that the permanent preservation of valuable and new varieties of fruits, of which the society's garden contains many, in their pristine and present state of health and vigour, appears to be an object of great importance; as does the retardation of the decay of many varieties, "such as the Cornish gilliflower apple, which, in my estimation, is and always was without a rival in the climate of England."

PART III.

MISCELLANEOUS INTELLIGENCE.

The Anniversary of the Horticultural Society of Charleston was celebrated on the 14th of July last. The room was decorated with plants and flowers, and at the stated hour a large company of ladies and gentlemen assembled to hear the Address of the Rev. Mr. Bachman. The Address being published in part in this number, we refrain from expressing an opinion relative to it, further than strongly to recommend its perusal to all of our readers, confident that they will be amply repaid, by the information they will obtain. After the delivery of the Address, the President arose, and having prefaced with a few remarks, proceeded to read over the list of premiums awarded, after which the medals were presented to the different candidates who were present, and to the friends of those who were absent. The ceremonies being gone through with, the Society adjourned to another room, leaving the company to view the flowers and plants, which were arranged around the one in which the Address was delivered. In the course of the evening the following Officers were elected:—

NATHANIEL HEYWARD, Esq. *President.*
JOEL R. POINSETT, Esq. *Vice-President*
Dr. S. H. DICKSON, *Corresponding Secretary.*
JOSEPH F. O'HEAR, *Recording Secretary.*
AUGUSTUS WINTHROP, *Treasurer.*
Dr. H. R. FROST, *Orator for the next Anniversary.*

Standing Committee—Rev. Mr. Bachman, Dr. Joseph Johnson, Judge C. J. Colcock, J. D. Legare, J. A. Winthrop, Dr. Isaac A. Johnson, Dr. S. Wilson.

Improvement of Worn-out-Lands —It is said that during the last few years, twenty thousand Swiss and Belgian emigrants have settled upon lands in Virginia and Maryland, which had been supposed to be worn out and almost worthless; but which under their cultivation has been made as *productive as the good lands of the West;* in consequence of which lands have risen in value, and industry has received a new impulse. If the farmers of this State will diligently set about improving their land, by all possible means, those who are most anxious to go to the West will soon be cured of the moving finger; and if the people will make a rail-road and carry their produce to market, many of North-Carolina's valued sons, who have already gone to seek their fortune in a new country, will be told of scenes of prosperity and happiness that will intice them back again to their own, their native State.—*N. C. Star.*

Protecting Plants from Bug Worms, &c.—The method which Judge Buel adopts to protect his young plants that are liable to be injured by insects, is to nail four pieces of thin boards or shingle in the form of a square oblong, and of convenient breadth; these are covered with cheap millinet. Thus made, it is put over the plant, and by being pressed into the soil, serves not only to keep off winged insects from the leaves, but also those worms or grubs that crawl under the surface. If one side of the frame is lower, or pressed down into the soil deeper than the other, and placed towards the south, more sun is admitted The millinet is taken off the frames, washed, and put away for another season.—*N. E. Farmer.*

Protect Birds.—"Instead of being regaled by the whisling robin and chirping blue-bird, busily employed in guarding us from that, which no human foresight or labour is enabled to avert, our ears are assailed, our persons are endangered, our fences are broken, our crops are trodden down, our cattle are lacerated, and our flocks are disturbed by the idle shooter, regardless alike of the expensive attempts of the experimental farmer, or of the stores of the labouring husbandman; whilst all the energies of his frame, and the aim of his skill are directed towards the murder of a few little birds, worthless when obtained. The injuries which are immediately committed by himself and his dogs are small compared with the multiplied effects of the myriads of insects, which would be destroyed by the animals whereof they are the natural prey." —*Col. Powell.*

Sulphur in Trees, to dostroy all Insects preying on them.—Farmers and gardeners ought to hail with rapture a safe, certain, easy and unfailing mode of driving away or destroying all the insects, bugs, caterpillars, lice, ants, which prey upon trees and often kill them.

Numberless have been the means proposed or devised to get rid of these troublesome guests, most of which are dirty, costly, or unavailing. Our farmers appear to have given up in despair the hope of preventing the deadly attacks of *curculios* on the roots of peach trees, and the fruits of the plum tree. Yet an efficacious mode is said to have been found several years ago in France, perfectly efficacious and applicable to all cases and all trees. The man who discovered it, deserved a splendid reward, yet his name has not even reached us. But we claim the honour to have been the first to make known the process in America, in 1823 in Kentucky, and in 1827 in Philadelphia. Yet the most useful knowledge is so slow to spread, that the fact is hardly known yet, or doubted by those who know of it.

We are happy to be able to publish two direct experiments in support of the fact and discovery.

1st. We bored and plugged with sulphur in the usual way, a plum tree which commonly dropped every year all the plums before becoming ripe, the *curculios* lodging eggs in their germs. This was done when the tree was in blossom. On that year hardly any fruit fell, and the tree produced quite well.

2d. We find in the *Genesee Farmer*, of January 28, 1832, that a young willow nearly killed by aphis or lice, and pissmires feeding on their honey, was quite revived in three days, and all the lice and ants driven off, by boring the tree with an augur five feet from the ground and three-fourth through the diameter, filling with brimstone and plugging tight. The tree has thrived ever since.

The modus operandi of this singular process is very easy to explain The vital energy of the tree and sap, dissolves the sulphur, carries it into circulation, and envolves it in sulphuric gas evaporating through all the pores of branches, leaves and fruits. This gas is a deadly poison to insects and to all animals, it suffocates them or drives them away as soon as they begin to smell it; but no injury whatever results to the tree.

We have never heard yet of any direct experiment on peach trees; but we are sure it will answer quite as well. If the sulphuric emanation could not reach quick enough the roots of the trees which are commonly attacked, the plugging must be done near the root or at the time of the descending sap, when it will sooner reach the roots. Let it be tried and the result made known. C. S. R.—*Amer. Far.*

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The Great Grape Vine.—Our friend Willis, of Oxford, Eastern Shore of Maryland, has furnished us with the following certificate of the number of bunches of grapes now in his great grape vine. It will be recollected that we have several times published the number borne by this vine heretofore: in 1831, we believe it was twenty-five thousand bunches or upwards. The number this year exceeds any thing we ever before heard of, and we doubt whether a parallel can be found for it. Mr. Willis will please give us a history of this vine, with the name of the kind of the grape.

Oxford, May 6, 1833.—We hereby certify, that we have counted the bunches of grapes, this day, that are on John Willis' grape vine, in his yard, of seven year's growth, as accurately as we could, and have made allowance for good count—we find on it fifty-four thousand four hundred and ninety bunches, besides many more young bunches appear to be coming out, and we are fully of opinion we have, by the rule we went by, allowed at least three thousand for good count, that are already in sight. No young growth that had not more than two bunches on it was counted; and we think at least one-third or more are double bunches, and are only counted as single.

CHARLES M. BROMWELL,
RICHARD MARKLAND.—*Am. Far.*

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Sagacity of Bees.—The instinctive sagacity of the honey bee every farmer has had occasion to notice. A curious instance of contrivance of means and success of ultimate ends, between two swarms was seen in this town last fall. A farmer, while crossing an open lot near the centre of the town, noticed a continued line of bees passing through the air, from one farm-house to another. He followed the advancing line and came to its termination, where he found a hive which had been assailed by two foreign swarms, the one he had followed and another diverging off in nearly an opposite direction. By some instinctive understanding between the two swarms, they had united their strength and simultaneously attacked the hive; the struggle was then over and the dead and dying bees belonging to it lay scattered around the hive. The honey had been taken out by the conquerors, who were then carrying it to their own hives, something like fifty pounds having been removed in less than twenty-four hours It was plain to discover, upon inspection, that a coalition had been formed between the two swarms, to attack and destroy the other, and afterwards to appropriate the honey to their own use. All this *was* done, but how the understanding was effected or the stipulations drawn up, we leave the naturalist and curious to decipher.—*Northampton Courier.*

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Fruit Trees.—A writer in the Bucks County Intelligencer, who appears to be a practical farmer, has commenced some essays on fruit trees in which he adduces arguments to the purse, to show that the farmers ought to extirpate every tree bearing an inferior kind of fruit, and supply its place with that of the best quality. He says, "they had better pay one dollar for each thrifty young tree of a superior quality of fruit, than to cultivate in their stead trees of an inferior quality, which were obtained gratis, and a dollar given with each for a gratuity." Of this there is no doubt. He says further:—

It is recommended that no one farmer have more than from three to five acres of apple orchard of one planting, as it has been found from experiment

that more cannot be managed to the best advantage without neglecting the farming operations. It is known that five acres of apple orchard, situated within 25 miles of the Philadelphia market, of the best grafted fruit, properly selected in good bearing order, and in an ordinary season, will yield as much profit, clear of all expenses, and 100 acres of arable land of the same quality.—*N. E. Artisan.*

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Painting Houses.—Economy is a consideration of primary importance in every community. But there are various kinds of economy. There is one kind which exhausts the purse and there is another kind which replenishes it. It is poor economy to expend a pound to save a shilling, but it is good economy to spend a shilling if a pound can be saved by it. Most of the dwelling houses in the country are erected and suffered to continue years without painting; this they suppose a matter of economy to save expense, but if the owners would "calculate a little" they would find, to use a yankee phrase, it "costs more than it comes to." A house without paint goes to decay rapidly and requires repairs much earlier and oftener than one with it. The rain insinuates itself into the crevices and pores of the wood, and there rots and occasions early decay. New clap-boarding is demanded every four or five years and if it is neglected, the boards suffer and the whole structure prematurely falls to the ground. A coat of paint, at half the expense of the repairs during a few years, remedies the difficulty and keeps the exterior in a state of fine preservation. We say nothing of the contrast presented by a dark, unsightly decaying house to a white, tasteful one, seen through the green foliage in the country.—*Northampton Courier.*

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Preserving Bees in Winter.—Mr. Tucker—I have seen several articles on the subject of bees in your valuable paper, the *Genesee Farmer*, and being a subscriber, I wish to give to the public the fruits of my experience. I have kept bees for fifteen years. Last spring a friend of mine told me if I would bury my bees in the ground I could keep them through the winter in that manner; accordingly I buried two hives that had but very little honey. I was confident that they would not winter for the want of food; I therefore thought I would try the experiment. I took them from the ground the 18th day of April, and found them in good health. They had not made use of the honey, as there appeared to be as much honey in the spring as when I put them in the ground. They must be buried below the frost, and in such a manner as to prevent the air from coming to them.

H. D. Gifford.

Bergen, Genesee County, May 17, 1832

On this subject, we find the following paragraph in the newspapers—where it originated we know not:

Preserving Bees in Winter.—Mr. Etheridge, of Montrose, Penn., who keeps a considerable quantity of bees, buried seven hives in the ground last fall by placing them on the ground, covering them first with straw, and then burying them in the earth to the depth of about ten inches. About the first of this month he took them out, and found them to be in excellent condition. Some of the hives when buried were poorly provided with honey, and Mr. E. is of opinion they could not have been preserved through the winter in the ordinary way.—*Gen. Far.*